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Table of Contents

EPIDEMIC POLYARTHRITIS: ANTIBODY TO A GROUP A ARTHROPOD-BORNE VIRUS IN AUSTRALIA AND THE ISLAND OF NEW GUINEA.

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TEN major epidemics of polyarthritis have been reported in Australia and nearby northern islands since 1928. Examination of sera from patients affected in Mildura, in the Murray Valley, during 1956 indicated that this disease might be caused by a Group A arthropod-borne virus; and in particular the Malayan mosquito virus, AMM2354, was found to be a useful indicator of Group A antibody (Shope and Anderson, 1960; Current Comment, 1960). The same authors examined 50 human sera for hæmagglutinin-inhibiting antibodies, and eight of these for neutralizing antibodies to Group A viruses. They found positively reacting sera in New South Wales, in Queensland and in New Guinea.

The present paper reports the presence of neutralizing antibody to AMM2354 in human sera from eastern and northern Australia and from the island of New Guinea, and in sera of horses, pigs and cattle in Queensland.

Materials and Methods.

Normal rabbit serum was prepared as follows: rabbits were bled from the ear vein, the clotted blood was held at 37° C. for one hour and centrifuged and the supernatant serum was filtered through a Seitz disc. The filtrate was stored at −20° C. for up to three months. As a diluent for virus, the rabbit serum was used at a dilution of 1:10 in physiological saline.

Mice were obtained from the stock of the Walter and Eliza Hall Institute. They were not a pure line.

Virus AMM2354 was received as fifth mouse passage material from Dr. M. Theiler of the Rockefeller Foundation Virus Laboratories in New York. It was passaged twice in Melbourne by intraperitoneal inoculation of suckling mice. A stock of virus was prepared from brains harvested on the second day after inoculation.

For the titration of the virus, tenfold falling dilutions of virus were held at 37° C. for 60 minutes, and then inoculated in volumes of 0·03 ml. intraperitoneally into batches of six suckling mice, aged from one to three days. The mice were observed for deaths over a period of ten days. The LD_{50} of the single batch of stock virus used was 10^{-6}.

Unless otherwise indicated in Table I, all human sera were taken from healthy volunteers.

TABLE I.

The Geographical Distribution of Human Antibody to Virus AMM2354.

State or Territory.	Residence of Donors.	Number of Sera Tested.	Number of "Positive" Sera.	Percentage of "Positive" Sera.	Year of Bleeding.	Age Group of Donors.[1]
Queensland	Brisbane area[2]	41	5	12	1958–1959	Adults and children.
	Brisbane area[3]	9	5	—	1958–1959	Adults and children.
	East coastal area[2]	38	12	32	1959	Adults and children.
	Toowoomba[4]	54	4	7	1959	Children.
	Townsville	21	17	81	1959	Adults aged over 45 years.
	Atherton Tableland	121	31	26	1959	Adults.
	Innisfail[4]	21	4	19	1953–1955	Children.
	Cape York Peninsula[5]	38	25	66	1957, 1959	Adults and children.
	Lockhart River mission[4 5]	26	16	62	1956	Adults and children.
	Mornington Island[6]	7	4		1957	Children.
		11	8	67	1951	Adults.
Northern Territory	Southern part[2]	8	0	—	1952	Adults and children.
	Northern part[2]	23	5	22	1952	Adults and children.
Papua	Brown River[2]	15	12	80	1956	Adults and children.
	Aramia River[2]	20	20	100	1956	Children.
New Guinea	Sepik River[2]	24	8	33	1956	Children.
	Highlands[2]	40	0	0	1956	Children.
Victoria	Murray Valley	85	25	29	1959	Adults.
	Western Victoria	36	7	19	1959	Adults.
	Southern Victoria	117	4	3	1959	Adults.

[1] Adults aged more than 14 years, children aged from two to 14 years.

[2] Submitted to Pathology Laboratory from patients with a variety of diseases.

[3] Patients with a history of rash or arthritis. These are reported by Doherty, Anderson *et alii* (1961).

[4] Sera screened undiluted. Other sera in table screened at a dilution of 1 : 5.

[5] Sera of natives. Other sera in table from whites.

For testing, serum samples were thawed and heated at 56° C. for 30 minutes and then diluted in physiological saline. For screen testing, sera were diluted 1: 5; for the titrations, a range of fivefold falling dilutions was used. Equal volumes of diluted serum and virus diluted 2×10^{-6} were mixed and held at 37° C. for 60 minutes. The mixture was inoculated into suckling mice as for the titration of the virus. The serum titre was expressed as the original serum dilution protecting 50% of inoculated mice.

Additional groups of Queensland sera were tested at the Queensland Institute of Medical Research, Brisbane. These sera were screened undiluted, and only a small proportion were titrated, serial $10^{-0.5}$-fold dilutions being used. The virus pool employed had a titre of $10^{-7.5}$ and was prepared in suckling mice inoculated intracerebrally with virus received from Melbourne.

Results.

Human Sera.

Neutralizing antibody to AMM2354 was found in a significant proportion of sera from all but two of the areas sampled (Table I). For each geographical area, approximately one-quarter of the sera with positive reactions were titrated. In each area the great majority of sera had titres over 1:50, and in many sera the titres were over 1:300.

The sera from Queensland came from towns scattered along the coast from Townsville to Brisbane, from the Toowoomba area, from an area with an elevation of 2000 to 3000 feet in the Atherton Tableland inland from Cairns, from Innisfail, from a number of centres in Cape York Peninsula (including missions on the west coast, two inland centres and a mission on the east coast) and from Mornington Island in the Gulf of Carpentaria (Figure I).

The youngest child with antibody in Queensland came from Gympie and was born in 1952.

In the Northern Territory, high-titre antibody was found in sera from Millingimbi Island, Beswick Creek and Port Keats. It was in this general area that the first reported outbreak among troops occurred in 1942 and 1943 (Halliday and Horan, 1943). These sera were collected in September, 1952, in the course of a survey conducted for other reasons (Miles, 1953).

There was a high proportion of adults and children with positively reacting sera in three flat coastal areas of Papua and the Australian Trust Territory of New Guinea—namely, along the Brown and Vanapa rivers just inland from Port Moresby, along the lower Sepik River on the northern coast and along the Aramia River in western Papua.

By contrast, no antibody was found in the sera of children from the New Guinea Highlands. The children who gave these samples had spent all their lives in their own villages, which lay in a valley about 6000 feet above sea level (Anderson *et alii*, 1960). Their ages ranged from three to 14 years, but most of them were aged over 10 years. The youngest child with antibody in the island of New Guinea came from the Brown River district and was born in 1954.

Antibody was scarce in southern Victoria. Of the four donors of positively reacting sera, three gave a history of frequent visits to the Murray Valley, where they might well have been infected with Group A virus. The fourth such donor was a young woman who had recently been married. Her husband frequently visited Mildura in the Murray Valley, but she firmly stated that she herself had lived her entire life in south-eastern Victoria, with only an occasional visit to Melbourne, but not to the Murray Valley. A second serum sample, taken from her during this interview, confirmed the presence of Group A neutralizing antibody to a titre of 1:60.

Animal Sera.

A high proportion of horses and pigs yielded "positive" sera, and nearly all the sera had titres of antibody in excess of 1:100 (Table II). The horses with "positive" sera had been bled in coastal towns of Queensland lying between Townsville and Brisbane, with the exception of one horse from north-west Queensland. Most of these animals had spent their whole lives in the one district.

Antibody titres in cattle were, on the average, much lower than in horses, one serum having a titre of 1:50, and those of the remainder ranging between 1:30 and 1:4. This fact may raise some doubts about the specificity of the bovine antibody.

Thirty-six wild mice were collected in south-east Queensland during August and September, 1959, and their sera were pooled in six groups, each of six sera. Four of these pools had antibody titres of 1:6, 1:6, 1:6 and 1:4 respectively, and two were "negative". Here again the significance of the results is open to question.

One of 30 sheep and two of seven possums (*Trichosurus vulpecula*) which were bled between 1957 and 1959 carried low-titre antibody (1:5 to 1:15), but these results may not be significant. The following animals, bled between 1954 and 1959, were devoid of serum antibody: eight goats, 11 dogs, 19 cats, 10 water-rats (*Hydromys chryso-*

gaster), 12 *Rattus rattus*, 10 *R. norvegicus* and 20 bandicoots (*Thylacis obesulus*) all from south-eastern Queensland, and 18 bandicoots from Innisfail.

There are substantial populations of both horses and pigs in Queensland, and of horses in the Northern Territory. However, their numbers seemed insufficient to serve as a major reservoir of Group A virus in Australia. Also, there are relatively few individuals of either species in the Murray Valley or in the coastal plains of Papua and New Guinea, and so suspicion fell on wild and domestic birds as possible reservoirs. These were examined for Group A antibody.

FIGURE I.
Map of eastern Australia and the island of New Guinea.

All the domestic birds, comprising the following groups aged more than one year, were "negative": 27 chickens bled at Mildura in the Murray Valley in April, 1956, at the end of the local epidemic of polyarthritis; 25 chickens and seven domestic ducks bled on the Aramia River in Papua in 1957; and 28 chickens bled in 1958 or 1959 at Townsville and in Cape York Peninsula of Queensland. Similarly, of 30 wild waterbirds shot on the Aramia River and the Brown River in Papua during 1957, only one carried Group A antibody. This was a Nankeen night heron (*Nycticorax caledonicus* Gm.) and the serum had a titre of 1:50. Eleven of 12 sera from wild birds, including ten ducks, shot in Cape York Peninsula in 1958 or 1959, were "negative"; the twelfth serum, from a duck of unknown species, neutralized a screening dose, but had an antibody titre of less than 1:3.

Discussion.

No ætiological agent has been isolated from patients with epidemic polyarthritis. However, on the basis of serological evidence, Shope and Anderson (1960) suggested that one of the Group A arthropod-borne viruses might have been responsible for the outbreak of this disease in Mildura during 1956. The exact identity of the agent could not be determined, and it was thought that the agent might be a Group A virus which had not previously been isolated.

Another Group A virus, AMM2354, has been used in the present survey of the incidence of antibody, and the results should be interpreted in this light. For example, the presence of Group A antibody can reasonably be assumed to indicate prior infection with one or more Group A viruses, but not necessarily with the virus of epidemic polyarthritis.

Since natives in northern Australia and in the island of New Guinea rarely move long disances, the finding of antibody in their sera is a good index of local infection. White donors are less satisfactory in this regard, and a small proportion of "positive" sera in any one area, such as southern Victoria, may have no local significance. But the finding of a high proportion of white people with antibody is taken to indicate an earlier spread of Group A virus in the locality.

TABLE II.
The Species Distribution in Animals of Neutralizing Antibody to Virus AMM2354 in Queensland.

Species.	District.	Number of Sera Tested.	Number of Sera "Positive"	Year of Bleeding.
Horses ..	South-east Queensland.	58	45	1953, 1955, 1960
	North and central Queensland.	8	3	1953
Pigs ..	South-east Queensland.	7	4	1956
Cattle[1] ..	South-east Queensland.	20	7	1956
	Innisfail.	20	5	1957

[1] Titres of "positive" sera were low.

On this basis, Group A virus or viruses have been shown to be distributed widely in southern and eastern Australia and in the island of New Guinea, with the possible exceptions of southern Victoria and the Highlands of New Guinea. This wide distribution of Group A antibody in humans confirms and extends the earlier findings of Shope and Anderson (1960).

The epidemic of polyarthritis in 1956 was confined to the Murray Valley, which, in Victoria, forms the northern border of the State. It was from investigation of this epidemic that Anderson and French (1957) determined an incubation period of 10 to 11 days for the disease. The four "positive" sera from southern Victoria were therefore unexpected. Three may be explained by prior visits of the donors to the Murray Valley, but if full credence can be given to the statements of the fourth donor, she was infected in southern Victoria. Does this indicate the occasional presence of a Group A virus in southern Victoria? Or may she have been infected by her husband after one of his frequent visits to the Murray Valley?

Two or more Group A viruses may have been responsible for the antibody reported in this paper. Under very favourable circumstances, during the epidemic of polyarthritis in Mildura in 1956, the virus AMM2354 detected antibody rises in the sera of only six (38%) of 16 patients with the typical illness (Shope and Anderson, 1960). It is assumed that the other 10 patients developed antibody to the virus of epidemic polyarthritis, but that this antibody did not cross-react with AMM2354. In the present survey, the Murray Valley, south-east Queensland and the northern part of the Northern Territory showed a rate of antibody of about 30%. By contrast, each of four northern areas—Townsville, Mornington Island, Cape York Mission stations and Papua—had an antibody rate between 60% and 100%. While alternative explanations are possible, this high proportion of positive reactors may reflect the presence in the latter region of a Group A virus more closely related to the Malayan virus AMM2354.

The failure to find antibody in domestic birds is most striking. Even in an area such as the Aramia River district of Papua, where every one of 20 children was "positive", no antibody was found in 25 local chickens, nor was antibody found in 27 chickens bled at the end of the 1956 epidemic in Mildura. No avian antibody was found in Queensland.

If this result was accepted at its face value, it would imply that Group A viruses in Australia did not infect birds. However, caution demands that alternative explanations be considered. Firstly, the domestic chickens bled were aged between one and three years and might have hatched since the previous epidemic of Group A virus. Secondly, local circumstances may have been unfavourable to avian infection. But a third possibility seems more likely—that avian antibody which developed in response to infection with the Australian Group A virus was sufficiently specific to elude detection in a neutralization test when the related virus AMM2354 was used. The clear distinction between these hypotheses must await further study and, possibly, the isolation of the local Australian Group A virus or viruses.

It is of some interest to compare the distribution of Group A antibody with antibody to MVE virus. Both types of antibody were found widely in eastern and northern Australia and in the island of New Guinea, but not in the New Guinea Highlands. Both were scarce in southern Victoria (Anderson *et alii*, 1952; Anderson *et alii*, 1960).

There are at least two regions where the distribution of Group A viruses among humans may not quite match that of MVE virus. Firstly, a clinical epidemic of polyarthritis was reported in 1956 from the south-west of Western Australia (Snow, 1958), an area which was apparently not infected with MVE virus in 1951 (Anderson *et alii*, 1952). Secondly, Group A antibody was common along the east coast of Queensland, whereas infection of humans with MVE virus may be less frequent there (Doherty *et alii*, 1960). However, it should be noted, that evidence of MVE infection has been demonstrated in chickens and horses in that area, and it is possible that the frequency of human infection with MVE virus along this coast is influenced by the high proportion of the population with immunity to dengue.

In summary, previous epidemiological findings have suggested that the natural histories of the viruses of epidemic polyarthritis and of MVE may be similar (Anderson and French, 1957; Anderson, 1958), and certain aspects of the geographical distribution reported in this paper would agree with this point of view. However, there are some possible differences in distribution, and also the significance of the absence of avian antibody to AMM2354 has yet to be assessed.

Summary.

Earlier work showed that six out of 16 patients with epidemic polyarthritis developed antibodies to Group A arthropod-borne viruses, including the Malayan mosquito virus AMM2354.

In the present work, sera from normal humans and animals in eastern and northern Australia and in the island of New Guinea were examined for neutralizing antibody to the virus AMM2354.

Antibody was found in sera from all the areas sampled, except the Highlands of New Guinea. Southern Victoria may also be free of infection with Group A viruses, since only a small proportion of humans was "positive" in this area.

Horses, pigs and cattle provided neutralizing sera, but no significant antibody was found in nine other species.

The sera of domestic chickens from heavily infected areas were consistently free of antibody.

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CLINICAL MANIFESTATIONS OF INFECTION WITH GROUP A ARTHROPOD-BORNE VIRUSES IN QUEENSLAND.

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THE epidemic of polyarthritis which occurred in the Murray Valley during 1956 was shown by Shope and Anderson (1960) to be caused by a Group A arthropod-borne virus (arbor virus). Of the agents tested, the Malayan Group A virus AMM2354 (Traub, 1957) was found to be the best available for detecting antibody rises in that epidemic.

Clinically similar epidemics had previously occurred in other Australian States. In Queensland they had been reported from several centres listed by Shope and Anderson (1960), and were discussed in a "Current Comment" in this Journal (1960). More recently a survey of human and animal sera has shown that neutralizing antibody to AMM2354 is common in Queensland in man, horses, pigs and possibly cattle (Anderson, Doherty and Carley, 1961).

A group of patients with illnesses resembling epidemic polyarthritis, or with evidence of Group A arbor virus infection, who were treated in Queensland in 1958, 1959 or 1960, is discussed in the present paper.

Materials and Methods.

Neutralization tests against AMM2354 were performed at the Walter and Eliza Hall Institute, or the Queensland Institute of Medical Research, by the method previously described (Anderson *et alii*, 1961). Neutralization tests against dengue viruses Types I and II, and hæmagglutination-inhibition tests against Murray

TABLE I.

Summary of Cases Investigated for Group A Arbovirus Infection.

Case Number.	Locality.	Date of Onset.	Patient's Sex and Age. (Years.)	Clinical Features.	Serological Tests.			Family Relationship.
					Days after Onset.	N.T.[1]	C.F.[2]	
I	Belmont (Brisbane).	14.3.58	M. 12	See case report.	20 315 645	100 100 150	<5 5 10	
II	Belmont (Brisbane).	22.3.58	M. 38	See case report.	12 307	>300 25	— 5	Father of I.
III	Belmont (Brisbane).	22.3.58	F. 34	See case report.	12 307	250 10	>40 5	Mother of I.
IV	Holland Park (Brisbane).	*c.* 1.4.59	M. 43	See case report.	*c.* 7 *c.* 31 *c.* 264	<4 100 5	<5 >40 <5	
V	Gympie.	4.3.59	M. 6	See case report.	7 22	4 300	<5 10	
VI	Tingalpa (Brisbane).	27.5.58	M. 26	Mild illness with pain in ankles, swollen left knee; no rash.	8 241	25 50	<5 <5	
VII	Tingalpa (Brisbane).	28.5.58	F. 26	Mild illness with sore left ankle, and rash on arms, legs, face and body.	7 240	15 40	<5 <5	Wife of VI.
VIII	Camp Hill (Brisbane).	16.6.58	F. 58	Febrile illness lasting 7 weeks, with polyarthritis and macular rash.	16 45	<4 <4	<5 <5	
IX	Camp Hill (Brisbane).	23.6.58	M. 21	Short febrile illness with rash; no arthralgia.	8 31	>300 >300	— 5	
X	Brisbane.	*c.* 12.7.59	F. 20	Mild febrile illness with rash, splenomegaly and leucopenia.	*c.* 6 *c.* 123	56 56	<5 <5	
XI	Clermont.	*c.* 22.1.60	M. 64	Illness with painful left hip and elbow; doubtful rash on chest.	*c.* 21 *c.* 37	25 79	<5 <5	
XII	Holland Park (Brisbane).	3.2.60	M. 24	Illness with headache, stiff joints, and rash on trunk and arms.	6 25	<1 <1	<5 <5	
XIII	Brisbane.	*c.* 1.1.60	F. 37	Uniform papulo-pustular rash on trunk, with aching limbs and mild upper respiratory tract symptoms.	*c.* 15 *c.* 55	<1 <1	<5 <5	

[1] Neutralization titre against AMM2354: original dilution of serum protecting 50% of suckling mice against 100LD_{50} of virus, given by intraperitoneal inoculation.

[2] Reciprocal of complement-fixation titre against AMM2354 antigen.

Valley encephalitis (MVE) virus, were performed at the Queensland Institute of Medical Research by methods described by Doherty, Carley and Lee (1959). Antigen for complement-fixation (CF) tests against AMM2354 was prepared by acetone-ether extraction of infected suckling mouse brain (Clarke and Casals, 1958), and the CF test was performed by the technique described by Jensen (1956).

Results.

Sera from 12 patients suffering from illnesses with arthralgia or rash were tested for antibodies to AMM2354 (Table I). One patient (described in Case IV) had a diagnostic rise in antibody titre. Three members of another family, whose "acute" sera were collected late in the illness, had either falling titres of antibody, or stationary titres of neutralizing antibody with a rise to low titre of CF antibody. The results in these three cases suggest, but do not prove, that the illnesses were due to infection with a Group A arbor virus. They are described in Cases I, II and III.

The laboratory tests did not confirm the diagnosis in eight cases (VI to XIII), the clinical features of which are summarized in Table I. Three of these patients had no antibodies demonstrable in their sera, while the sera of the remaining five neutralized AMM2354 without a significant change in titre between "acute" and "convalescent" sera.

A significant antibody rise was also demonstrated in a child (Case V) with fever, but without rash or joint symptoms.

Seven of the 13 patients had serological evidence of previous dengue infection, but none had any significant change of titre of Group B antibody, as measured by the MVE hæmagglutination-inhibition test.

Reports of Cases.

CASE I.—A., a schoolboy, aged 12 years, from Belmont, a rural suburban area on the southern outskirts of Brisbane, noticed a sore throat and pain in his ankles, knees, elbows and shoulders on March 14, 1958, and a rash four days later. He had occasional sweats, and his temperature was recorded as 101° F. on one occasion in this period. There was no history of previous rheumatic fever. He was admitted to the Princess Alexandra Hospital on March 22. On examination of the patient, his knees, ankles and elbows were warm, but not swollen and he had some pain on movement of the knees. No rash was recorded. The erythrocyte sedimentation rate (ESR) on March 23 was 23 mm. per hour (Cutler). An electrocardiogram on March 25 showed inverted *T* waves in lead III and isoelectric T waves in leads aVF and V6, and was interpreted as evidence of mild myocarditis. He was considered to have rheumatic fever, but made a rapid recovery. The erythrocyte sedimentation rate on March 29 was 8 mm. per hour, a throat culture yielded no pathogens, the white cell count was within normal limits and no heterophile agglutinin to sheep cells was detected. He was discharged from hospital on April 2.

He was readmitted to the Princess Alexandra Hospital on December 14, 1959, with a history of repeated episodes of joint pain since his discharge, more severe in the previous four days. His temperature was 99·4° F., and remained at that level for 24 hours. Slight enlargement of lymph glands in the neck, the groins and the left axilla was the only abnormality detected. The erythrocyte sedimentation rate was 14 mm. per hour; the white cell count was 4300 per cubic millimetre, and 15% of the lymphocytes were abnormal; the cerebro-spinal fluid was normal. An electrocardiogram on this occasion showed the *T* waves to be inverted in Lead III, biphasic in Lead aVF, and upright in Lead V6. He did not appear to be ill, and was discharged from the hospital, free of symptoms, one week later.

CASE II.—B., a postal employee, aged 38 years, father of A., had a sore throat for a week, pains in his ankles, knees, wrists and left elbow from March 22, 1958, and a

rash on his body, legs, toes and face two days later. He was treated with tetracycline at home, without improvement, and was admitted to the Princess Alexandra Hospital on March 26. He was afebrile, and his joints were not obviously inflamed, but he complained of some pain on movement. The rash was visible, but was described as "almost faded". One observer described a "diffuse, non-tender lymphadenopathy". He improved rapidly in hospital and was discharged on April 2. Investigations in hospital, including an estimation of the erythrocyte sedimentation rate, an electrocardiogram, a white-cell count, a heterophile agglutination test, an X-ray examination of the chest and a microscopic examination of the urine, demonstrated no abnormality. He complained of a brief recurrence of arthralgia six weeks after his discharge from hospital, but has been well since.

CASE III.—C., a housewife, aged 34 years, the mother of A., noticed sore ankles, knees and wrists on March 22, 1958. She was treated with tetracycline without improvement, and was admitted to the Princess Alexandra Hospital on March 26. On examination of the patient, her joints were tender but not obviously inflamed, and there was no rash. The erythrocyte sedimentation rate on March 27 was 18 mm. per hour, and it was 12 mm. per hour on March 31. An effusion in her right wrist was recorded on April 2. She complained of headaches and shivers that day, but remained afebrile. Joint pains continued, especially in the metacarpophalangeal joints. White-cell counts were recorded on March 27 (10,200 per cubic millimetre), April 3 (24,000 per cubic millimetre) and April 8 (9500 per cubic millimetre). An electrocardiogram taken on April 3 showed very low *T* waves in all leads; this abnormality was not present in an electrocardiogram taken on April 14. She was discharged from hospital on April 16, still with some pain in the wrists, and was readmitted on June 11 with persistent joint pains in the knees, the ankles and the wrist for a trial of steroid therapy. She was treated with prednisone, and later with ACTH, was given physiotherapy, and was finally discharged on July 19. She still complained of occasional joint pain when seen in January, 1959, and in June, 1960, when pains in the knee, the ankle and the distal interphalangeal joints sometimes woke her at night.

A fourth member of this family was admitted to the Mater Children's Hospital at the same time with a similar illness, but no serum was obtained for investigation.

CASE IV.—D., a clerk, aged 43 years, of Holland Park, a southern suburb of Brisbane, was examined in the outpatient department of the Brisbane Hospital on April 7, 1959. He complained of aching in both legs present for about a week, mostly in the shins, a painful heel and general malaise. He noticed a rash on April 6. On examination of the patient, this was seen to be a maculo-papular rash on the trunk, arms and face; in some areas the papules appeared vesicular. There was an area of confluent macules about 5 by 2 cm. on the anterior aspect of the right leg. An enlarged lymph gland was felt in the right anterior cervical group. No other abnormality was found. He was admitted to hospital. His temperature on admission was 99·0 ° F., but was subsequently not above 98·4° F. The erythrocyte sedimentation rate was 11 mm. per hour. The electrocardiogram was normal. An X-ray film of the chest showed no abnormality. The hæmoglobin value was 14·7 grammes per 100 ml. The total leucocyte count was 3800 per cubic millimetre, 34% being neutrophils, 58% lymphocytes, 4% monocytes and 4% eosinophils. The platelets appeared normal in number and morphology. Microscopic examination of the urine showed only an occasional leucocyte and red cell.

The rash had faded by April 10, and the patient was feeling well and was discharged from hospital. When examined again on April 13, he had headache and felt miserable; he had noticed pains in his muscles over the preceding few days. The symptoms apparently subsided rapidly after this, and he was not treated again for this illness, although he attended the hospital regularly for other minor ailments.

CASE V.—E., a schoolboy, aged 6 years, of Cedar Pocket, near Gympie, had a febrile illness commencing on March 4, 1959. His mother noticed that he had a high temperature and was sleepy and mildly anorexic, but did not think he appeared ill. He vomited on one occasion. When he was examined on March 6, his temperature was 104° F. and he appeared sleepy, but no other abnormality was detected. No rash or joint pain was noticed at any time during the illness. The child was admitted to hospital; he remained febrile until March 9, and was discharged on March 12. His mother subsequently stated that he had a further episode of fever one month after his discharge.

Discussion.

The virus of epidemic polyarthritis has not yet been isolated, so the present serological work has been done with another Group A virus, AMM2354. The known members of Group A share some, but not all, antigens, and AMM2354 might be expected to detect a proportion, but not all, of the patients recovering from epidemic polyarthritis. For example, Shope and Anderson (1960) found that only six of 16 patients with clinically typical illnesses from the 1956 Mildura epidemic produced antibody to AMM2354. The failure to confirm the diagnosis in eight of the present series of 12 patients is therefore not surprising. In addition, sera from several patients were not collected at optimal times; had sera been collected earlier in the acute stage, antibody rises might have been demonstrated in some of the patients with antibody in both sera. It is therefore possible that some at least of the eight serologically unproven patients were, in fact, infected by the virus of epidemic polyarthritis.

The clinical features of the four serologically "positive" patients with polyarthritis were similar to those recorded in previous epidemics in Australia (Anderson and French, 1957), although the recurrence of episodes of joint pain for more than a year, as described in Cases I and III, has not been common in previous epidemics. Electrocardiographic abnormalities have not been recorded previously in epidemic polyarthritis; it would seem advisable to accept the changes in Cases I and III with some caution, as they were minor, short-lived and not associated with any other evidence of myocardial damage. However, they do emphasize the importance of the differential diagnosis from rheumatic fever; this has been stressed by previous authors (Halliday and Horan, 1943), but would obviously be more difficult in sporadic cases occurring in the absence of an epidemic, especially if the rash was absent or fleeting.

Case V is of interest. If it is accepted that the fever and antibody increase were both caused by a Group A virus, then two explanations are possible. First, the clinical picture (fever without rash or arthralgia) may be a clinical variant of epidemic polyarthritis. There were many instances of polyarthritis without rash, and of rash without polyarthritis, during the epidemic in Mildura in 1956, but no patient there had a temperature over 101° F. A second explanation, that the fever may have been caused by another Group A virus, must therefore be considered.

The seasonal distribution of the serologically positive cases, and of most of the suspected cases, was similar to that described in previous epidemics (Shope and Anderson, 1960). Four of the five patients with positive serological findings, and five of the eight suspects, lived in adjoining suburbs on the southern outskirts of Brisbane. However, this apparent concentration may only reflect the interest of several practitioners in that area.

None of the five patients with positively reacting sera had been away from their home towns for at least several months before their illnesses, so it must be assumed that they were infected there. This study therefore established Brisbane and Gympie as new geographical records for Group A infection. The occurrence of small numbers of cases in successive years, and in the absence of a recognized epidemic, is of some interest in view of the previous Australian reports of large epidemics at long intervals.

It would seem, therefore, that some at least of the human Group A immunity demonstrated in Queensland by Anderson *et alii* (1961) is due to infection with the virus of epidemic polyarthritis. It is possible that other Group A viruses may also be active. It is probable that much of the immunity is due to subclinical infection. Research on the natural history of Group A infection in Australia is handicapped by the need to use a heterologous virus; the isolation of the Australian virus, or

viruses, and the identification of the vector, are the two important immediate goals in this field.

Summary.

The clinical histories are given of four patients studied in Brisbane in 1958 and 1959, who had illnesses clinically resembling epidemic polyarthritis, and who gave laboratory evidence of recent infection with a Group A arbor virus. The clinical diagnosis of epidemic polyarthritis in eight other cases was not confirmed by the available tests. One patient from Gympie had a febrile illness without rash or arthralgia, and had laboratory evidence of recent Group A infection.

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AN INTRODUCTION TO THE McWHIRTER CONTROVERSY.

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PROFESSOR R. McWHIRTER, of Edinburgh, argued that if the axillary nodes were not invaded by breast cancer, their removal by radical mastectomy was unnecessary. As advantages of simple mastectomy, he held that by not dissecting the axilla the risk of disseminating cells from that site was eliminated; that post-operative irradiation could be given sooner than after radical mastectomy; that the operative mortality was reduced; and that post-operative irradiation reduced local recurrence (McWhirter, 1948*b*).

The First Proposition.

Surgeons are said to have been disturbed by the "logic" of the statement that if the axillary nodes are not invaded, nothing is to be gained by removing them (Leading Article, 1958). However, this is merely verbal logic, and its only vision is hindsight. Haagensen (1956, page 92) reported that nearly half the patients in clinical Stage I were found on routine microscopic examination to have axillary metastases. Paradoxically, the greater the interest, the greater this discrepancy, for special interest produces more sections of the axillary nodes. Pickren, for example, recut the axillary nodes in 33 specimens regarded at Haagensen's hospital as free from metastasis after routine examination of sections. He found metastases in six (Haagensen, 1956). Probably, therefore, not less than half the patients in clinical Stage I have suffered axillary invasion.

The Risk of Dissemination.

In proclaiming radical mastectomy to be unsuited for the treatment of gross invasion of the axilla, McWhirter agrees with the findings of Halliwell (1924), Keynes (1932), Ross (1939) and Haagensen and Stout (1943). However, in the treatment of slight invasion, no evidence supports him. Haagensen has provided details of such patients treated by radical mastectomy without irradiation. When microscopic examination revealed invasion of only one or two axillary nodes, five-year survival was gained for three patients out of four (Haagensen, 1958). Nor is simple mastectomy blameless. If the tumour is in the upper outer quadrant, simple mastectomy involves impingement on invaded adjacent nodes (Patey, 1953), and cancer arises in the upper outer quadrant nearly as often as in all other quadrants added together (Pullen *et alii*, 1955).

Accompanying Irradiation.

The claim that simple mastectomy would allow earlier irradiation supposed that irradiation would accompany radical mastectomy; but after surveying more than 1200 patients, Truscott (1947) was unable to show that irradiation improved the results of surgery. Paterson and Russell (1959) have shown that: (i) the five-year results after radical mastectomy are not worsened if irradiation is withheld and the patients are watched, radiation therapy being given only if indications appear; (ii) about two patients out of three thereby escape irradiation in the first five years after operation, for it becomes necessary during that period for about one-third; (iii) in the first year after treatment, more of the irradiated than of the non-irradiated die.

Operative Mortality.

Riddell (1948) reported 170 consecutive radical mastectomies and Haagensen (1956) 553; their operative mortality was nil.

Local Recurrence.

McWhirter (1948*a*, 1948*b*) observed that radical mastectomy in the 1930's without irradiation was followed by frequent local recurrence. Against this he set a later series in which irradiation was added and the outcome was better. A contemporaneous control series was not provided.

Four Exceptions.

McWhirter recommends radical mastectomy for obese patients, for patients with apical pulmonary opacities or peripheral vascular disease, and when there is no clear line of demarcation between the primary tumour and the axillary nodes (McWhirter, 1955 and 1958).

Parasternal (Internal Mammary Node) Deposits.

McWhirter (1957) reported that irradiation of the anterior mediastinum gave a slightly better survival rate for patients with inner-half than with outer-half tumours. To use this, one needs to know the relative prognoses with and without this treatment. Smithers *et alii* (1952) thought that inner-half tumours had a worse prognosis, but regarded their figures as insufficient to prove this. Pierce *et alii* (1956) found a worse prognosis for inner-half tumours if the axilla was free of metastases, but, if not, inner-half tumours seemed to offer the slightly better prognosis. Truscott (1947) found no variation in prognosis with site, nor did Lane-Claypon (1926). Post-irradiation

persistence of cancer cells has been seen; Handley removed the parasternal nodes from six patients after X irradiation and had cancer cells demonstrated in five (Handley and Thackray, 1954).

Swollen Arms.

Williams *et alii* (1953) held that there was a lessened incidence of swollen arms after simple mastectomy with irradiation, but reported ungraded swelling of the arm after "simple surgery" in 5%. Among 90 survivors of radical mastectomy done between the years 1922 and 1931, Devenish and Jessop (1937) found 15 with swollen arms; they graded them, and only five had a limb of "a size sufficient to cause some trouble". Not all reports of swollen arms after radical mastectomy are helpful, because in some series irradiation has also been used, and irradiation itself causes swollen arms (Carling *et alii*, 1955). In Edinburgh it is not clear whether simple mastectomy with irradiation has reduced the number of swollen arms (Bruce, 1957).

Possible Disadvantages of Irradiation.

McWhirter generously offered the use of his department to the pathologist Ackerman, who found persistence of cancer cells in axillary nodes secondarily excised (Ackerman, 1955).

McWhirter (1955) wrote that the hyperæmia induced by irradiation in doses sublethal to cancer cells might spread these cells. However, in any course of irradiation the early applications are inevitably sublethal. In mice, irradiation has been followed by an increased incidence of metastases (Kaae, 1953). In women, 18% more showed distant metastases after irradiation than in a similar group treated without irradiation (Bond *et alii*, 1958).

Artificial Menopause.

Beatson used thyroid in addition to oophorectomy (Beatson, 1896 and 1911), and thus conducted a double-barrelled experiment, the success or failure of which could be attributed at will to either component. Oophorectomy is further to be distinguished from irradiation to the ovaries. McWhirter (1948*b*) at first prophylactically irradiated ovaries, but later abandoned this (McWhirter, 1957).

Attempted Comparisons.

Radical mastectomy with eclectic irradiation is used for almost all Mayo Clinic patients (Berkson *et alii*, 1957). Using axillary invasion rates, Bond and Waterhouse (1958) attempted comparison. In this, McWhirter's axillary invasion rate was an estimate derived from the years 1935 to 1940, when radical mastectomies were done on 72% of Edinburgh patients (McWhirter, 1948*a*, 1948*b*). This estimate should not be applied to the smaller proportion, 56%, "assigned to the operable category" by McWhirter in 1955, because a lowering of operability rate means that it is those showing axillary invasion who have been taken out of the operable category.

Watson (1959) followed McWhirter in presenting without selection the patients seen in one geographic region; but the slight margin apparently favouring radical mastectomy does not lead to a conclusion, if only because his patients were treated a few years more recently.

Clinical Stage I.

Handley and Thackray (1954) found parasternal deposits in six out of 23 patients whose axillæ had suffered only slight invasion. Hence, from the second paragraph above, the incidence in the whole group belonging to clinical Stage I would be six in about 40. As for the supraclavicular zone, only three out of 100 patients had metastases there, though 41 of the same group were found to have deposits in the axilla (Andreassen *et alii*, 1954).

Conclusions.

1. In clinical Stage I breast cancer, to assume innocence in the axilla is as likely to be wrong as right. The slogan question, "Why remove the axillary contents if they contain no metastasis?", is therefore not applicable to current clinical work.

2. Radical mastectomy therefore retains a role in clinical Stage I at least, for it removes impalpable axillary deposits. If adequate searching reveals only one or two of these, three-fourths of the patients survive for five years without irradiation.

3. Swelling of the arm complicates not only radical mastectomy, but also axillary irradiation. Any difference in incidence does not appear large enough to favour a choice of McWhirter's method ahead of radical mastectomy without irradiation.

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CARCINOMA OF THE BREAST.

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AND

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THIS paper presents an analysis of 300 cases of carcinoma of the breast observed by the Department of Surgery and the Department of Radiotherapy of St. Vincent's Hospital, Sydney, over the period 1954 to 1958. The object of this survey is to review the general picture of management of carcinoma of the breast as practised in this State. The picture presented should be reasonably representative, as it contains not only those patients primarily treated by a teaching hospital, but also those treated elsewhere and referred for radiotherapy, either as a post-operative procedure or after recurrence.

There is no doubt that a considerable diversity of institutes and practitioners consider themselves capable of managing, and operating on, breast cancer. In this series the primary operative interference, radical or simple mastectomy, was performed by surgeons in teaching hospitals, by metropolitan surgeons not in teaching hospitals, by metropolitan part-time surgeons, by country full-time specialist surgeons, by country part-time surgeons, and also by general practitioners untrained in surgery.

The time interval from the commencement of these observations does not permit the usual five-year to ten-year survival figures. This is not of the first importance in this context. The first two years after treatment contain quite sufficient incident to warrant careful analysis, and the methods of treatment chosen are of considerable interest in themselves.

Age Incidence.

The age incidence ranged from 25 to 89 years, and is illustrated in Figure I. The series includes two males.

Symptomatology.

Two hundred and fifty-eight cases began with the patient's discovering the lump and showing it to her doctor. Pain or discomfort in the breast before the discovery of the lump was noticed by 17 patients, discharge from the nipple by four. The remaining cases were detected by a clinician on routine examination, the patient being ignorant of the presence of any abnormality in the breast.

Delay in Treatment.

Patients' Delay.

It is noticeable that, in spite of the present-day emphasis on early reporting, one-third of this group of patients delayed doing so for more than six months, and 54 delayed for over 12 months. Some of the tumours so neglected were very slow-growing in nature, and there is one recent case in which the history appears unquestionably to be over 30 years.

Doctors' Delay.

In addition to the patients' delay, there was also in 31 cases quite a significant delay on the part of the doctor first consulted for specific lumps. In eight, the

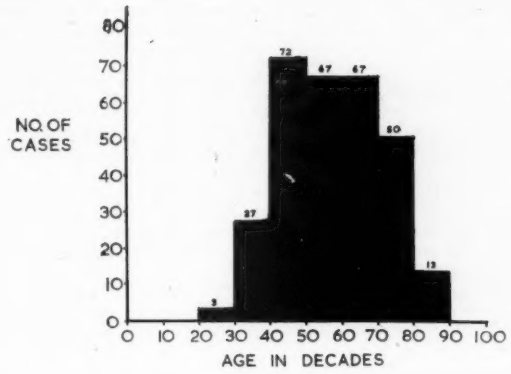

FIGURE .

Age incidence of carcinoma of the breast, St. Vincent's Hospital, Sydney, July, 1954, to July, 1958.

delay so occasioned was between three and six months, and in 23 it was over six months. This means that the doctor has been the cause of marked delay in the institution of treatment in more than 10% of this series. The usual cause of this was frank failure on his part to recognize the nature of the lump in the breast. It appears that too much importance has been placed upon the so-called cardinal physical signs of carcinoma of the breast. In reality, the typical textbook signs are those of an advancing tumour, and it is most important that if a lump is encountered which does not have these signs, they are not supinely waited for before the patient is referred for further examination.

In isolated cases the nature of the carcinoma appears to have been recognized, but the doctor, or the hospital to which the patient was referred, seemed to believe that the treatment of cancer was not worth while.

Staging.

The staging of carcinoma of the breast is a difficult and vexed question. There is no final international agreement as to a definite clinical method. The interpretation of results is somewhat simplified after the orthodox radical mastectomy, as the pathological involvement of glands can be reasonably well proven in the axilla. Even then, the condition of the apical axillary, the supraclavicular and the internal mammary glands will still remain an unknown quantity. After simple mastectomy or conservative treatment, staging must be based on clinical evaluation of lymph-node involvement, and this is notoriously inaccurate.

In this series the problem is made still more complex by the lack of uniformity in methods of treatment. We have adopted, for the purpose of this analysis, the following methods of staging:

Stage I. Group (*a*): There was a mobile lump in the breast, histological examination of the axillary glands was carried out and no metastases were found. Group (*b*): There was a mobile lump in the breast, clinical examination of the axilla revealed no hardening or enlargement of the nodes, but no pathological examination of these could be carried out.

Stage II. Group (*a*): As group (*a*), Stage I, but metastases were found in the nodes. Group (*b*): As Group (*b*), Stage I, but clinical involvement of the axillary nodes was considered to be unequivocal.

Stage III (Manchester Stage III). The growth extended beyond the corpus mammæ as shown by the

following observations: (*a*) the skin was invaded or fixed over an area large in relation to the size of the breast; (*b*) the tumour was fixed to the underlying muscle; axillary glands might or might not be palpable, but if glands were present they must be mobile.

Stage IV (Manchester Stage IV). The growth had spread beyond the breast, as shown by: (*a*) fixation of axillary nodes indicating extension outside the capsule; (*b*) complete fixation of the tumour to the chest wall; (*c*) secondary lymph nodes in the supraclavicular region; (*d*) secondary deposits in skin wide of the tumour; (*e*) secondary deposits in the opposite breast; (*f*) distant metastases — for example, bone, liver, lung, etc.

This somewhat makeshift and mixed classification is adopted merely for the purpose of evaluating this group of cases. According to the foregoing criteria, we have classified the cases as follows: Stage I, 103; Stage II, 105; Stage III, 64; Stage IV, 19. The information concerning the remainder was so doubtful that they have had to be excluded from definite classification.

Method of Treatment.

The following methods of treatment were adopted (Table I): radical mastectomy alone, 24 cases; radical

TABLE I.

Treatment According to Staging.

Stage.	Radical Mastectomy Only.	Radical Mastectomy and Radiotherapy.	Pre-Operative Radiotherapy and Radical Mastectomy.	Simple Mastectomy Only.	Simple Mastectomy and Radiotherapy.	Conservative Treatment.
I	8	48	3	1	32	11
II	9	69	4	1	18	4
III	0	7	3	0	10	42
IV	1	3	0	1	3	11
Indeterminate	6	0	0	0	0	5

mastectomy and post-operative radiotherapy, 127 cases; preoperative irradiation followed by radical mastectomy, 10 cases; simple mastectomy followed by post-operative irradiation, 63 cases; radiotherapy with or without hormonal adjunct (including simple excision of mass and radiotherapy), 66 cases; simple mastectomy only, 3 cases; chemical or hormonal treatment only, 7 cases.

Detailed Analysis of Results According to Method of Treatment.

Radical Mastectomy Alone.

Twenty-four patients were treated by radical mastectomy without radiotherapy. In 11 of these cases the tumour recurred during the first two years (Table II),

TABLE II.

Recurrence in Yearly Periods after Treatment by Radical Mastectomy.

Years.	Number of Patients Exposed.	Number of Recurrences.
1	24	7
2	24	4
3	23	0
4	17	2
5	15	1

with a heavy emphasis on local recurrence, as follows: The choice of treatment in this group was obviously very poor (see discussion below).

Radical Mastectomy Followed by Post-Operative Radiotherapy.

The total number of cases in this group was 127, and the staging was as follows: Stage I, 48; Stage II, 69; Stage III, 7; Stage IV, 3.

Local recurrence	11
Supraclavicular recurrence	5
Distant metastases	7
Axilla	0

Number of patients : 14

There were 43 recurrences in the period 1954 to 1959. The recurrence rate is shown in Table III, and the sites of recurrence are shown below:

Local recurrences	18
Supraclavicular recurrences	7
Distant metastases	27
Axilla	0

Number of patients : 43

There seems to be no doubt that the first two years are the most critical, and we have studied the recurrences after different methods of treatment over this time.

It is seen from Table III that no fewer than one in six patients treated in this manner suffered recurrence during the first two years. It may be stated that, while we refer here to recurrence only, all patients who had recurrences have since died or have multiple metastases. The actual death rate during the first year for patients treated by radiotherapy was 14 of 127. Of those with

TABLE III.

Recurrence in Yearly Periods after Treatment by Radical Mastectomy plus Radiotherapy.

Years.	Number of Patients Exposed.	Number of Recurrences.
1	127	19
2	93	12
3	68	6
4	50	2
5	26	5

proven metastases in the axilla after radical mastectomy, nearly one-third had recurrences in the short time of observation. Of the Stage III cases, there were recurrences in five out of seven.

The individual cases comprising this group of recurrences have been critically reviewed, and the following observations made.

These patients were operated on originally by the variety of surgeons mentioned earlier. After careful consideration of the 32 cases, it becomes plain that eight patients had really advanced tumours quite unsuitable for radical mastectomy, and seven had a delay varying between one and four weeks between preliminary excision of lump and the definitive operation. Of the remainder, while they were technically operable, 10 had glands in the axilla which were described as being either large or numerous and not always mobile. We may state, therefore, that 18 of these cases were too advanced for radical mastectomy, and that in seven others there was a marked delay between primary interference and definite surgery. The remaining six patients either appear to have been well selected and treated, or it is not possible to draw conclusions.

Pre-operative Radiotherapy Followed by Radical Mastectomy.

The last group of radical mastectomies consists of 10 cases in which, for various reasons, pre-operative irradiation was given. Four of these patients had excisions of the mass elsewhere, and it was elected to use irradiation before surgery for this reason; all these have remained without recurrence. Five were considered to be on the borderline of operability, and it was hoped to lessen the risk of recurrence; three of these had recurrences during the first three years and have died, two have been well without recurrence for three years. Another patient was treated by irradiation because she refused surgery. She subsequently had a local recurrence and underwent radical mastectomy then. She has remained free from local recurrence for two years, but has developed pulmonary metastases.

Simple Mastectomy Followed by Post-Operative Irradiation.

Simple mastectomy followed by radiotherapy was used in 63 cases. This method has shown a steady increase in popularity in recent years. In a few instances simple mastectomy was chosen by reason of the patient's age or general condition, but in the great majority of the 63 cases the choice was deliberate.

Table IV shows the recurrences, and the 16 recurrences in the first two years have been critically reviewed in retrospect, as was done for the radical mastectomy group. In 12 cases it was recognized that the disease was disseminating, and this method of treatment was chosen deliberately for this reason. Local recurrence took place only once after treatment in Sydney hospitals, and in retrospect the choice of treatment would appear to have been reasonable. Another five patients were first treated outside the metropolitan area and the selection appears to have been faulty, in that the primary disease was advanced and local chest wall recurrence took place in four of the five. The sites of recurrence are shown below:

TABLE IV.

Recurrences in Yearly Periods after Treatment by Simple Mastectomy plus Post-Operative Radiotherapy.

Years.	Number of Patients Exposed.	Number of Recurrences.
1	63	9
2	50	7
3	25	1
4	19	1
5	10	0

Local recurrences	6
Distant recurrences	16
Axilla	8

Number of cases : 18

It is noticeable that axillary recurrence or reactivation was seen in eight cases, whereas it was not observed in any of the radical mastectomy group. However, in none of these eight cases did the axillary disease cause any disturbance to the patient. Of the 63 patients exposed to one-year follow-up investigation, one died in the first year (compared with 14 of 127 in the radical mastectomy and radiotherapy group). The comparable figures for the second year were as follows: three died, of 50 exposed in the simple mastectomy group; five of 93 died in the radical mastectomy groups. The local recurrences in the radical mastectomy group were 18 out of 127, and in the simple mastectomy group six out of 63.

Discussion of Treatment.

The various methods of treatment used in this series (Table I) are: radical mastectomy alone; radical mastectomy followed by radiotherapy; radical mastectomy after deliberate pre-operative irradiation; simple mastectomy followed by full irradiation; non-operative treatment, mostly including irradiation to the primary tumour and glandular areas (this group includes simple excision of the mass and radiotherapy).

Additional methods being widely used elsewhere are extended radical mastectomy and orthodox radical mastectomy associated with the intravenous administration of chemical or radioactive agents. We will discuss the various methods in general use in this series.

Radical Mastectomy Alone.

If there is spread or suspected spread to any glandular area, there is evidence to warrant post-operative irradiation, at least to the internal mammary chain and supraclavicular areas. The axilla is no problem after a properly performed radical mastectomy so far as recurrence is concerned. There is no question but that early spread of the disease is very difficult to detect in lymph nodes. Pathologists are agreed that the more careful the clearing of the axillary fat and contents, so many the more involved nodes can be detected. The simple histological examination of one section of each node palpable in the inadequately cleared specimen is not sufficient for the making of a definite negative report. In the 24 patients treated by radical mastectomy not followed by radiotherapy, the surgeon was of the opinion that he had eradicated the disease, and that there was no indication for post-operative radiotherapy. The recurrence rate of nearly 50% in two years does not support this impression (Table II). It would appear that it is very difficult to be sure that there is no glandular spread, even if the report on the axilla is negative, and this line of treatment is not, in our opinion, often indicated.

Radical Mastectomy Followed by Irradiation.

There were 127 patients treated by this method. After detailed review, we are of the opinion that many of these were poorly selected, and comprised 25 of the 31 who had recurrences in the first two years after treatment. Radical mastectomy has been for so long a standard treatment that there is too often too little critical evaluation of its application to individual cases. Radical mastectomy is brought into disrepute when it is not confined, as it should be, to apparently eradicable disease. There is no doubt that proper selection is often very difficult and occasionally impossible. However, there are certain concrete contraindications to a radical mastectomy. These may be listed as follows: (i) ulceration of the skin (Paget's disease excepted); (ii) *peau d'orange* of any degree; (iii) Stage III tumours (the mass is large in relation to the size of the breast, or the skin is involved over an area large in relation to the size of the breast); (iv) fixation to the chest wall; (v) inflammatory carcinoma; (vi) the presence of satellite nodules; (vii) advancing axillary nodal involvement represented by (*a*) nodes over 2 cm. in diameter, (*b*) any degree of fixation, (*c*) apical group involvement, (*d*) œdema of the area; (viii) supraclavicular gland involvement; (ix) other distant metastases.

Any patient in this series who presented any one or more of the foregoing signs and who was treated by a radical mastectomy has definitely tended to do badly, and it is quite evident that such patients are being treated by radical mastectomy. For example, five out of seven Stage III patients so treated were dead or dying within two years. It is difficult to be dogmatic, but a strong impression is gained that in unsuitable cases this treatment actually hastened the course of the disease. In some cases it was very readily apparent—as, for example, when massive chest-wall recurrence rapidly appeared after treatment (Figure IV).

The value of post-operative radiotherapy as a prophylactic measure is very difficult to assess. We believe that it has its very definite place for the following reasons: (i) Comparison of the figures for treatment with and without radiotherapy supports this view. (ii) There are in this series six cases in which, after a radical mastectomy, irradiation was given to the apical axillary, the ipsilateral supraclavicular and internal mammary areas. In these cases there has been no recurrence over the treated areas, but there have been recurrences in the contralateral supraclavicular region. One must presume that the irradiated lymphatics were also involved, but have been controlled by the irradiation. (iii) We have definite evidence, in our small series, of triple biopsies in which all three areas were involved; but in spite of this, the patient still survives free of disease.

It seems reasonable still to suppose that, followed by irradiation to the associated gland areas, radical mastectomy offers the best chance of long-term survival in Stage I or early Stage II cases. However, this remains a presumption and is extremely difficult to prove.

Surgical Technique.

The one point arising out of this series is that wide skin removal and skin grafting are almost always indicated. In this series it is apparent that post-operative œdema has most often followed delayed skin healing due to skin-flap necrosis or infection. Irradiation after these complications is very likely to increase the troubles, and much of the bad reputation earned by irradiation in this regard is in fact due to the combination of irradiation and delayed healing.

Simple Mastectomy.

Simple mastectomy has been performed in this series in 63 cases for the following reasons: (i) as the treatment of choice for all operable lesions (50 cases); (ii) when the patient's age or general condition made her a poor operative risk; (iii) when the surgeon, who otherwise may have done a radical mastectomy, has clinical or pathological proof that there is such involvement of lymphatics to make permanent cure unlikely; (iv) in some instances apparently by untrained persons, presumably to avoid doing the more difficult radical operation.

The staging of this group is necessarily largely clinical. We have tried to define Stage II as those cases in which there could be no reasonable doubt that the axillary nodes were involved. It seems to us that there should be no dispute between surgeons advocating only radical mastectomy and those advocating only simple mastectomy. It would be better to direct such discussion towards indications for the methods of treatment which should be applied to the various stages of breast cancer.

It is obvious that simple mastectomy will cure a patient only when the disease is confined to the breast. There is no way of proving the localization of a tumour unless either the axillary or the internal mammary nodes are available for histological examination and blood spread is excluded.

These facts are not known in the early breast cancer.

It is possible, therefore, that if simple mastectomy is applied as a method of treatment in all operable cases, a small group of curable patients may be wrongly treated. This small group comprises those whose early axillary gland involvement is the only metastatic spread. Such patients are probably best treated by radical mastectomy, provided that the disease cannot be controlled by irradiation, and this also is very difficult to prove. There were 32 clinical Stage I patients treated by this mehod, and there have been no recurrences to date.

Simple mastectomy, like radical mastectomy, is also contraindicated when the following findings are present: (i) ulceration of the skin; (ii) *peau d'orange;* (iii) involvement of the whole of the breast in the tumour; (iv) skin nodules; (v) inflammatory carcinoma of the breast; (vi) fixation to the chest wall.

Simple mastectomy in advanced cases offers no real relief from the local problems associated with breast cancer. Early local recurrence, skin nodules and ulceration of the skin are almost invariable if there is ill-judged interference. This has been borne out in this present series in the cases which we regarded as poorly selected for surgery.

What, then, are the indications for simple mastectomy? They may be listed as follows: (i) as an occasional aid in the more efficient treatment of the disease by radiotherapy; (ii) to eliminate the chance of local ulceration by removal of the breast and tumour in properly selected cases; (iii) when the general condition of the patient, or her anticipated survival time, contraindicates more radical procedures; (iv) in all cases in which the apical axillary glandular involvement is present, or in which the glands in the axilla are large; (v) in cases in which the inner half of the breast is the site of the tumour, the axilla is clear and internal mammary biopsy gives a positive result. Irradiation may be given after biopsy of the mammary chain, and mastectomy deferred, so that the primary growth's response to radiotherapy can be assessed. If it fails to respond, then post-irradiation simple mastectomy can be performed. If metastatic deposits develop rapidly, there is no need for mastectomy.

Certain facts have emerged from the study of the simple mastectomy series: (i) The local recurrence rate in properly selected cases is low, but in badly selected cases it is as high as after radical mastectomy. (ii) Axillary gland recurrence is rarely a problem. The disease appears reasonably well controlled in the axilla by adequate radiotherapy. The patient far more frequently develops trouble from distant metastases. (iii) Relatively more patients are alive at the end of two years than in the group submitted to radical mastectomy and irradiation. (iv) After simple mastectomy, patients usually begin radiotherapy within 14 days of operation. In the radical mastectomy plus radiotherapy group, the delay often amounts to six weeks or more, because of delayed healing. (v) Adequate irradiation is usually very easily applied after simple mastectomy, but may be very difficult after radical mastectomy, particularly if there is delayed healing. Complications following radical mastectomies are undoubtedly more troublesome than after simple mastectomies.

The Inoperable Group.

In this group are collected those patients who were considered to be inoperable by reason of advanced disease, or because of general health, including age. There was also included a very small number who steadfastly refused major operative interference. The staging shows that while most of the cases were advanced, there were several in which radical treatment would have been given if the patients' general condition had permitted. It is remarkable that, of the 10 Stage I patients who were treated by simple excision of the mass followed by irradiation, all have done well. There were only two local recurrences, and one of these was doubtful. This record should be compared with that group of patients who had a simple excision followed a week or more later by radical mastectomy. Seven of these had recurrences and died in the first two years. Another four cases have already been mentioned in which simple excision of mass was followed by X-ray therapy as a deliberate precursor to a subsequent radical mastectomy. All these patients also are well to date.

Although a much longer follow-up investigation of the present series and further experience are required for proper assessment, it is quite plain that the combination of simple excision of the mass and irradiation can be on occasion an excellent method of treatment. This is by no means a new observation. This has been advocated and practised as a method of choice for operable lesions by Mr. Mitchener of London; and, in

fact, a simple mastectomy prescribed by McWhirter is little more than a wide local excision. An additional factor is that a local recurrence after simple excision and radiotherapy, while it did take place in two of our cases, was no bar to subsequent control by radical mastectomy. Local recurrence after a wide simple mastectomy is as difficult to control as after a radical mastectomy.

The efficacy of treatment by irradiation of the primary disease is shown in Table V. It is frequently stated that

TABLE V.
Response of Primary Breast Tumours Treated by Irradiation.

Response.	Number of Cases.
Excellent (lesion disappeared) ..	26
Good (substantial reduction) ..	13
Temporary (marked recurrence inside two years)	5
Poor or none	22
Total	66

a long-term sterilization of a primary carcinoma of the breast cannot be obtained by external irradiation, and the truth of this is becoming apparent in this group. We practise it only of necessity. However, shorter-term survivals are frequently obtained, and this may be all that is required if the over-all treatment of the case is intended to be palliative, and disseminated disease is to cause the patient's death.

The type of lesion so treated is important. The small, hard, localized lesion was controlled in four of our cases by localized implant of radon seeds. A main advantage of this over other methods is that in the frail, elderly patient it can be done in a few minutes in a single out-patient visit. We have employed implantation also for small residual tumours after external irradiation.

The large mass, without much *peau d'orange*, and with or without ulceration, is one in which an excellent result may be obtained, and most of the remaining "good" cases in this group are of this type.

The massive lesion which involves most of the breast presents great difficulty. The degree of *peau d'orange* appears to be significant in those cases in which the whole of the breast is involved, but in which there is little lymphatic infiltration of the skin; the mass can frequently be made to regress for lengthy periods (Figures II, III and IV). When, on the other hand, there is extensive *peau d'orange* over the whole breast, the condition is often practically untreatable by orthodox methods. X-ray therapy given in the usual manner is not effective. We have been trying other methods of attacking this problem since the time under review, and are meeting with some success. The method used for external irradiation in this group has been high-voltage X-ray therapy. Since these patients were treated, we have obtained a cobalt-60 therapy machine and are tending to treat more and more patients by this means. We hope to get considerably higher dosage through the breast, and it may be that our results will consequently improve. We have not yet adopted a routine method of employing either chemicals or hormones, together with irradiation to the primary tumour. Hitherto, we have maintained local treatment for local conditions, either the primary or the secondary tumours, so long as the secondary deposits are reasonably few in number.

The Problem of Skin Recurrence.

Allied to the problem of treating the local disease is that of treating local recurrence. This may occur as an outcrop of skin nodules after treatment of a primary growth *in situ*. This commonly represents lymphatic infiltration, and is, as always, excessively difficult to control. Skin recurrence after a mastectomy must be regarded as a surgical misadventure (Figure IV). In many cases, it is a result of frankly poor judgement on the part of the surgeon. At times, it is an unforeseeable complication of a lesion which is deceptively far more active than it appears. The mechanism of local recurrence is still not entirely clear, but it may reasonably be said to be from (i) cellular spill at operation,

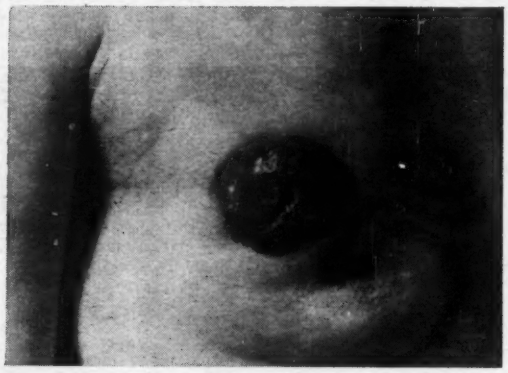

FIGURE II.
Extensive carcinoma of the breast before treatment.

FIGURE III.
Typical response following routine deep X-ray therapy.

(ii) the cutting across and leaving behind involved lymphatics, or (iii) the leaving behind of other spread of disease. What is not clear, is what may reactivate the tumour at any particular time. It is often stated that such recurrences appear rapidly or not at all. This is not by any means always the case, as we have several patients in this series who remained free from any type of recurrence for periods of some years, and then quite suddenly developed, not only skin metastases widely spread over the chest wall, but also at the same time glandular and other distant metastases. This plainly represents an upset of a host-tumour relationship which we do not understand.

There is no doubt that better selection of cases results in fewer local recurrences; but there is also no doubt that it is impossible for the most careful surgeon not to have the occasional chest-wall recurrence. The question of "prophylactic irradiation" of the chest wall must arise. We have accepted the situation that, if the patient is still suitable for a radical mastectomy, she should not develop chest-wall recurrence, and therefore we do

not, as a routine, irradiate the chest wall after this operation. Logically, it should not be necessary, and, in addition, as we shall attempt to explain, post-operative radiotherapy appears to be remarkably useless in this connexion. After a properly performed radical mastectomy, the chest wall is excessively thin and has a very poor blood supply, and often requires a split skin graft. The whole area is wide, and it is impossible under these circumstances to irradiate it adequately. Moreover, it seems that the scattered and microscopic nature of residual tumour tissue is peculiarly difficult to eradicate successfully by irradiation. The X-ray treatment of the chest wall in McWhirter's method of management is axiomatic after a simple mastectomy, but we have found wide recurrence after a simple mastectomy in a badly selected case.

FIGURE IV.
The result of a radical mastectomy for a Stage III lesion.

Of the patients under review here, those who received McWhirter's treatment did have their chest walls irradiated, and we have found that local mastectomy is far better than the wide simple mastectomy, and the results appear to be more satisfactory. It is our impression that one effect of the decision not to irradiate a chest wall after a wide mastectomy is that the realization that no help can be forthcoming from irradiation in this regard seems automatically to improve the selection of patients for a radical mastectomy. When one is faced with a massive chest-wall recurrence, local treatment is always difficult and often impossible. Only a relatively small amount of irradiation can be given, and this usually falls far short of what would reasonably be accepted as a cancericidal dose. Some resolution can often be obtained; this is occasionally complete, but often it is incomplete and only temporary.

We have had the experience also of having to treat recurrent disease in a chest wall which had already been irradiated prophylactically, and then finding that the small amount of irradiation we were now able to give was enough to cause resolution of the neoplasm. This has confirmed us in our decision not to irradiate chest walls after wide excisions, but to await events, and thus be able at least to give the maximum local irradiation possible when the circumstances demand. These remarks do not, as a rule, apply to the relatively few patients who have small isolated nodules. These present no serious problem, and may be treated by radon seed implant or local X-ray therapy. When we do see a localized small recurrence in the chest wall, particularly after a considerable interval, we are inclined to believe that it may be only a precursor of other wider manifestations, and we therefore usually do not treat it for a while, but keep it under observation, awaiting the appearance of any other signs of spread.

Glandular Metastases.

One of McWhirter's most controversial observations has been that it is easier to sterilize a glandular metastasis than a primary breast tumour. On this statement has been based a great deal of the criticism directed against his methods. We have found that we have, in fact, seldom been convinced of the complete sterilization of a primary lesion even when the clinical response has been dramatic; and on occasion, the irradiation of obviously involved nodes has resulted in their disappearance to date. The difficulty, of course, is to know when glands are involved, particularly when they are not enlarged. We have observed that when there are no nodes palpable, their appearance after adequate irradiation, while it does happen, is not too frequent. When it does occur, it is more common in the parasternal region than elsewhere.

We have often observed diminution in the size of treated glands and their remaining apparently in a state of suspended activity, and when we have been able to make sections of such glands (for example, after pre-operative irradiation), we have found that the nodes invariably have contained active tumour. Observations on the simple mastectomy group indicated that these nodes seldom recommence growing to become a problem. As we have already mentioned, we have four cases in which the tumour has recurred in the contralateral supraclavicular region which was not irradiated, but not in the ipsilateral supraclavicular region which was.

Our impression is that one can certainly produce a temporary improvement in involved glands, but if the involvement is considerable, then long-term sterilization of the tumour should not be expected. Where the gland is very small, it may well be possible to obtain a long term result, but this is difficult to prove. For these reasons, we have accepted the value of post-operative irradiation of glandular areas, even in the absence of palpable nodes. In the present series, all such irradiation was given by means of high-voltage X-ray therapy, but lately we are using supervoltage irradiation to bring the dose to a considerably higher level than we were able to do before.

Distant Metastases.

The object of this paper is to discuss some of the problems of the management of the primary disease and the local glandular areas. Distant metastases do not properly come within its scope, and will not be discussed at length. Briefly, our policy is to treat disseminated disease by local irradiation when possible. When the multiplicity of spread becomes too much for irradiation, we usually employ a hormone. Adrenalectomy and oophorectomy are reserved for those cases in which the disease cannot be controlled by any other means.

When this stage is reached, we believe that adrenalectomy should be undertaken without further delay.

Conclusions.

1. Practitioners should recognize that all lumps in the breast are potential cancers until proven otherwise.

2. The management of carcinoma of the breast should be undertaken by trained personnel in association with a fully equipped institution.

3. The best results are obtained by close association from the outset between surgeon and radiotherapist.

4. A better attempt should be made to select cases for radical mastectomy.

5. Too high a percentage of patients are being subjected to radical mastectomy in this State.

6. Stage I patients, and apparently early Stage II patients, should be treated by radical mastectomy, followed by irradiation.

7. There should be no delay between excision of a lump and radical mastectomy.

8. When an excision of a lump has been followed by a delay for any reason, the dangers of mastectomy should be recognized and pre-operative irradiation considered.

9. Stage II (other than early Stage II) patients would appear to be best treated by simple mastectomy and full post-operative irradiation.

10. The local dangers of poor selection of cases for simple mastectomy are equal with those following radical mastectomy.

11. Stage III and Stage IV patients should not be treated surgically, as palliation by other means is superior.

THE STATUS OF PROFESSIONALIZATION IN HOSPITAL ADMINISTRATION.[1]

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ALEXANDER M. CARR-SAUNDERS AND P. A. WILSON, two British scholars, made a thorough analysis of many occupations which were generally recognized as professions, as well as several others that are aspiring to this status. Their studies led them to the conclusion that they should not attempt a definition, but should rather ". . . conclude that certain vocations, possessing (certain) characteristics in a greater or lesser degree approach more or less closely to the conditions of a profession" (Cogan, 1955). After a thorough review of the statements on the subject, Cogan concludes that:

> A survey of the literature reveals that the promulgation of a satisfactory definition has progressed but little beyond the six criteria proposed by Abraham Flexner.

As a guide to the discussion that will follow, Flexner's criteria of a profession will be given. Flexner (1915) states that:

> Professions involve essentially intellectual operations with large individual responsibility; they derive their raw material from a science and learning; this material they work up to a practical definite end; they possess an educationally communicable technique; they tend to self-organization; they are becoming increasingly altruistic in motivation.

From these statements, it is evident that a precise definition of the qualities of a profession is extremely difficult to formulate. On account of this vagueness, many aspiring groups have felt their claim to professional standing to be a legitimate one. In addition, there is a certain aura attached to the word "professional" that appears automatically to raise the standards of the group with little, if any, soul-searching on the part of its members. Consequently, the term "professional" has become a somewhat nebulous word. It is of note that Funk and Wagnall's "New Standard Dictionary" states that professionalism is "often used in a derogatory sense".

It is impossible to proceed any further in this discussion without clearing up the central problem of reaching a definition. It is suggested that Cogan's (1955) discussion of "The Problems of Defining a Profession" will at least offer in outline form an approach toward the solution of this problem. It is not within the scope of this presentation fully to implement Cogan's approach, but it is hoped that a brief discussion of it will at least show its feasibility. A central point of this discussion is the belief that "this perplexity appears to derive in large part from the difficulty of communicating ideas and resolving differences when a single term, profession, is used to designate disparate referents". As an initial step in the process, he points out that we should note the historical definitions. It is then possible to begin to isolate the essential features of a profession in general, and tentatively to determine the boundaries that distinguish it from a semi-profession, vocation, trade, craft or art.

The second level of definition is referred to as persuasive. This aspect refers to the persuasive needs for education and training, followed by personal commitment to an ethical code. Cogan states that "where, as in a profession, it becomes necessary to redirect men's attitudes, the power of the persuasive definition should not be underestimated".

The third level of definition is termed operational, and it is brought forth to establish the basis upon which individuals and associations may make specific decisions as to the behaviour that is expected of the members. Cogan remarks that "the demand for operational definitions stems from the scientific temper of the times. It is a demand for the observable and the measurable; it will not be satisfied by lexicological and persuasive statements". For the practitioner, these operational definitions are guideposts in his day-to-day decision-making. An example of this would be the making of certain rules for professional conduct.

Perhaps it would be advisable to caution the reader that the power of definition to dictate professional standards and conduct is limited. It should be obvious that definition alone will not solve the problem. However, it is hoped that this will provide a framework for professional conduct which is indicative of the profession's standing.

Also, generally, students of occupations and professions have paid little attention to the range of differences in behaviour which may be included within a single profession. In a study such as this one, attempting to determine the professional status of hospital administration, there should not be concentration exclusively upon norms and central tendencies of professional conduct. "Erroneous ideas have thus emerged concerning the monolithic unity of some professions." (Smith, 1957.)

Taking the acknowledged professions as a guidepost, hospital administrators cannot expect to achieve professional stature until they actively engage in practices reflecting this status. It is also important to recognize the inherent dangers of the comparative method of approaching the problems of administrators in a professional study. One should note the ever-present danger of making invalid comparisons and superficial analogies. Yet, on the other side, one should not neglect the relevant experience of the most advanced professions.

Historical Definition.

One clear lesson to be derived from the history of professions is that systematic attention by the practitioner

[1] Read by Professor Hartman at the annual meeting of the Australian Institute of Hospital Administrators in June, 1960.

to the problems of professionalization is always a prerequisite of the professionalization of any occupation. Any thorough study of the desirability of, or level of professional activity among, hospital administrators must involve an attitudinal study of their beliefs in this area. Consequently, a certain amount of tension and dissatisfaction with the *status quo* is necessary for any type of movement leading towards institutionalized change.

Once there has been an historical examination as an initial step, then it becomes possible to begin to isolate the essential features of the profession of hospital administration in general. In order that hospital administration may qualify as a profession, it must have a definite and essential social function to perform. The functions of a profession will necessarily be an important factor in determining the qualities required for success. Also, the length and content of professional training are related to the functions to be performed. They will also provide the basis for the evaluation of the work done by the profession, and for the compensation and social prestige to be granted to the practitioner. Thus, many aspects of the profession are closely geared to its functions. In determining the functions delegated to a profession, we must recognize certain inherent difficulties. The fact that a profession must have a definite and socially necessary function does not mean that new knowledge cannot change the status.

A discussion of the functions of professionalization would not be complete without including some reference to the dysfunctions. These are especially relevant at the local hospital level. Yet, from the perspective of the hospital field, these local dysfunctions appear to be more orderly, and even functional in certain instances. First of all, professionalization will result in higher mobility among the administrative group, as its members will be more aware of job openings. Also, as a result of this, the over-all salaries are likely to rise as the top hospitals attempt to hold their qualified men. From the standpoint of the economy of the local hospital, these higher salaries will be another factor in the rising costs of hospital care that need to be interpreted to the public. In addition, the organizational structure of the hospital will suffer if there is a succession of administrators trying to attain higher status in their professional group by moving to hospital positions recognized as being influential in the hospital field. Mobility in an over-all sense is desirable in our economy; yet it can have repercussions of a conflict nature on the local level.

Associated with the development of professionalization of hospital administration is the development of a more technical language, which will have its effect on the communication network of the hospital. This development is likely to increase the communication problems between the administrative group and the doctors, department heads and employees. There are certain functional aspects of communication that are possible when the language is used more precisely, provided that there is a common understanding among the communicants. Perhaps the department heads, sharing a more common background with the administrative group, are more likely to adopt the new jargon than the medical men. In fact, it may be hypothesized that initially, at least, professionalization will be regarded with suspicion and lack of understanding by the medical staff, and will result in increased tension and conflict in the administrative-medical relationship. Again, a more professional language, when understood by the communicants in the hospital setting, could result in a more functionally orientated hospital.

The rise of professionalization is, of course, not occurring in a vacuum, but alongside medicine, which is a long-established profession. This offers certain dysfunctions, both at the level of the local hospital and at the national level, when national organizations come together during the development of professionalization. Over a period of time, it is hoped that these problems will be ironed out, but they do offer certain short-range problems that have the potential of slowing down or halting any movement towards professionalization.

Professional ethics and responsibilities are a part of the organizational structure of medicine, while a more individualized approach has been followed by many hospital administrators. The union movement has resulted in hospitals' being forced to cooperate in forming a unified front, but this type of cooperation has been achieved, in some cases, as an expedient move without careful thinking and study. Larger metropolitan areas have organized hospital councils, and there are various regional organizations that offer exchange of information, but none of these has the true characteristics of a professional society.

Gouldner (1958) discusses how the problems at the local and national levels are differentiated. His discussion also has relevance to a study of dysfunctions, as the professional movement is apt to have a stronger impact at the regional and national level over the local community hospital setting.

> The distinction between cosmopolitans and locals seems particularly promising because it focuses attention on the tensions between the modern organization's need for loyalty and expertise. It suggests that certain types, the dedicated, the elder, the true bureaucrat and the home guard subserve the group's need for loyalty while the cosmopolitans function to satisfy the group's need for expertise. Moreover, the cosmopolitan-local distinction appears to be potentially fruitful for the study of organizational dynamics and especially intra-organizational tensions and conflicts.

A certain amount of tension and conflict is necessary for change, but the dysfunctions of professionalization can have an inhibiting effect that should not be overlooked.

Related to both the functions of the profession and its level of expertness is the scope of professional autonomy. Basically, the scope of professional autonomy refers to the range of decisions and behaviour, which are left to the discretion of the professional group. An historical study of professional autonomy is important in pointing the direction of professionalization, for it rarely remains static for very long; it may expand in some directions while simultaneously contracting in others.

Persuasive Definition.

The second level of definition was, earlier, referred to as persuasive. If hosptal administration is to remain both desired and desirable, then powerful persuasive definitions are of the utmost importance. The Hippocratic Oath and the persuasive definitions offered by Abraham Flexner, as mentioned earlier, are two striking examples of the force of persuasive definition. Both have been translated into the programmes and behaviour of contemporary medical societies. Professor Charles L. Stevenson (1944) has noted that such statements are used "consciously or unconsciously in an effort to secure, the interplay between emotive and descriptive meaning, a redirection of people's attitudes".

A code of ethics which is formulated, interpreted and enforced by the professional group itself is a generally accepted characteristic of a profession. Many purposes are served by such codes. They can offer a basis for distinguishing between scrupulous and unscrupulous professional behaviour. In this connexion, they serve as a basis for excluding the incompetent, or defending the individual who is being unjustly attacked. They help acquaint the new practitioner with his professional obligations, rights and privileges. Also, they serve as a basis for professional etiquette among practitioners, and for their relations with the group they serve.

However, in the hospital field, unless these codes are enforced they are practically useless. The present American code is orientated towards protecting the hospital patient more than the administrator. Consequently, the code cannot be considered as a credit toward professionalization until it can be shown that an administrator who has acted unethically will be asked to resign from his position and his hospital professional society. To justify such drastic action, it is important that the codes also satisfy such criteria of good laws as clarity, consistency and reasonableness. Otherwise, enforcement will be either non-existent or highly arbitrary, and resulting in much injustice.

The persuasive elements of licensing are also relevant to this discussion. Through the American Medical Association, doctors, in their practices, exert a strong influence on medical licensing. Also lawyers, through the American Bar Association, have much to say about the standards for admission to the Bar. This interest on the part of licensed practitioners in the licensing of prospective practitioners characterizes all the leading professions. It should be noted that certification refers to the procedure by which licensing agencies recognize an individual's competence to perform certain activities. The certificate itself, of course, is not a guarantee of a position, but it does state that the holder is legally qualified to practise the profession.

This development has not reached the hospital administration field by any means. The fact that hospital administration integrates its knowledge from several fields, such as medicine and the behavioural sciences, is not a sign of inconsistency. Yet these borrowings have not been integrated into a definitive body of knowledge; and this fact would make any type of licensing difficult. However, the American graduate programmes in this area offer promise of a time when a discrete area of knowledge can be marked off and truly considered as professional.

Members of a group which is spear-heading moves to change the status of hospital administration must always take into consideration the possibility of resistance within their own area. For many members, the present state of affairs may be most satisfactory and within the realm of their qualifications. They may feel comfortable, having achieved success or recognition on the basis of their present skills. Drastic changes in the system may invite new competition, or require new courses of education and training. For individuals who have settled into a career line, change is often difficult, and sometimes nearly impossible. Alteration of an existing system of status and prestige arrangements may involve deep-seated threats to personality. Thus, the brakes on change within a profession should never be overlooked; and an organization may well include resistance to change within its very principles of organization.

The hospital administration group may also be involved in competition with other professions within the hospital setting, and this may lead to organizational strain. Who sets, or should set, the standards for the emerging hospital profession? In other words, from where does the mandate for professional function and change arise? Answers to such questions may involve important attitudes or sanctions of these related hospital professions.

Operational Definition.

The third level of definition, as outlined earlier, is described as operational. The major advantages of the operational definitions are that they limit the possibility of idiosyncratic professional behaviour, and secondly, they tend to establish more firmly the boundaries between genuine professionalism, unprofessionalism and non-professionalism.

Victor Bush (1957) writes:

> The primary characteristic of a profession is that members of a profession minister to the people. From the earliest times, this primary characteristic has been the hallmark of professional men when such men have lived up to their high skill.

The concept of ministering offers a fruitful subject to apply to the operational definition. First of all, as the word minister is used here, it implies more than service and does not mean servility, inferiority or apology. Members of a profession minister with dignity, and demand the respect that is due to their skill and devotion. Their role is not just advisory, for they insist on being heard at the appropriate time and place. Also, they do not offer their opinion for the judgement of the persons being served or aided. Yet, they do recognize that the public may need to join their findings with factors outside their special field of reference in coming to a decision. In order to maintain the respect of the public for their area of knowledge, they refrain from making any appearance of speaking with authority, except in the area of their own competence.

As was mentioned earlier, for the hospital administrator to perform the role of ministering to the public, whether as patients or as citizens at large, it is basic that the core of administrative behaviour should represent a definitive body of knowledge.

Almost every important study of the professions stresses the role of the professional organization. This organization provides the machinery by which the members of an occupational group can achieve collective action beyond the realm of the individual. Within a developing profession, such as hospital administration, it would be well to examine and compare the aims of the rank-and-file members in the United States of America with those of their professional associations — the American Hospital Association and the American College of Hospital Administrators. From among the future-orientated members of the American hospital group, the personnel of such associations may be selected. It would be helpful to study the attitudes of the senior rank-and-file members towards any proposed changes on the part of associations which would affect the existing security systems rooted in the *status quo*. Also, from the members' side, it would be helpful to determine the adequacy with which their needs are being met by the associations through the latter's policies and programmes. In addition, it would be helpful to compare the aims of the associations with those of the city councils and State and regional organizations.

Continuing, still, at the third level of the definition, it has been shown by many writers that every profession operates to a certain extent through a set of fictions about itself. These provide the profession with a comfortable self-image. This may be a stereotype, used to help meet and adapt to the many contingencies of everyday operation. In themselves they may be true images, but they are permitted to engulf or obscure other images. These fictions help to define immediate functions; and they help the profession to relate to others in terms of some mutuality of expectancy. Also, they perform useful and necessary functions in recruitment. Such fictions may tend to concentrate the rewards of prestige in some areas and not others, and will then figure importantly in the profession's adaptation to public needs. However, as with all fictions operating in human behaviour, there is need for an occasional testing of reality; otherwise the individual and the profession are in danger. It can be quite a shock if the profession has come to believe in a set of fictions too grossly at variance with reality.

When this thinking is applied to hospital operation, there has been a certain idealism in stating the goal of the hospital to be the provision of good patient care. As a part of an operational definition of hospital administration, it would be helpful to determine the important administrative aspects of good patient care, as well as the relevant medical side of this goal. This goal is recognized as a basically true image identified with the hospital setting, but it is also an important one, deserving of more study and reflection.

Next, in both the education and the practice of hospital administration, there has been a shift from housekeeping and other institutional details to a more inclusive provision of medical service. An operational examination of hospital administration should note this direction of change. In the educational setting, courses which cling to a vocational trade school approach are giving way to those which will make contributions to the university and to education as a whole.

An operational definition of hospital administration will not be well established and uniformly accepted by the field of hospital administration until the role of the administrator is more clearly defined. The role concept will have further to define, as Holmgrain (1959) states, the administrator's

> . . . function and purpose, and more important, his understanding and application of a set of administrative principles in relation to the manner in which his work

is carried out and has been professionally developed by the field. This is dependent on the development and acceptance of the major principles of administration, put to practice in industry and government, and finally universally accepted and successfully put to practice in hospitals.

In concluding this section on operationalism, it would help to take a forward look at the field. McGrath (1959) states:

> In the future, to a greater degree than at present, it may be expected that the professions which reach high social status and acceptance as preferred occupations will be those who prepare their members not only for specific responsibilities of their calling, but also for the more inclusive activities of civic and personal life.

Also, in the process of contributing time to community service, which is indirectly related to their immediate job, administrators can obtain a sample of the public's needs and attitudes toward medical care. There has been some awareness on the part of hospital administrators of the community's effect on hospital operation. Yet, as shown in America (by the recent Blue Cross hearings for rate increases and the hospital union demands for higher wages for their members), administrators need to spend more time with the various community groups in explaining their problems as these affect hospital care.

Conclusion.

The discussion here so far has largely taken the premise that professionalization of hospital administration is desirable. It should be pointed out that the desirability of professionalization is by no means entirely a settled matter. In fact, there are some observers who regard the professions as approximating a predatory conspiracy against society. As one writer describes it (in the Proceedings of a Conference on the Utilization of Scientific and Professional Manpower, 1954):

> It is regrettable that the public has to be on its guard whenever an occupation sets out to establish its status as that of a profession. For one thing, customers tend to be transformed into clients . . .
>
> More serious is the fact that the occupation almost invariably lays claims to powers of self-regulation which insensibly or deliberately entail monopoly privileges.

The point of view taken in this paper is that professionalization of hospital administration would be beneficial both to society and to the practising administrator and his related organizations. There are, of course, dangers in allowing an occupation to become professional with respect to its prerogatives while simultaneously permitting the practitioners to evade their professional responsibilities.

Any discussion of professional movement should take full consideration of the functional and dysfunctional aspects. While the dysfunctions appear to be primarily of a local nature, disappearing with a wider perspective, still they cannot be discounted, for regional and national organizations represent the summation of individual points of view, in addition to their own interests, which they try to maintain. In any representative form of organization, the leaders must to a certain extent follow the dictates of their constituents over a period of time.

Most of the present studies of professional activity have been made by educators and sociologists. It would seem, now, that those more closely identified with the field of hospital administration should encourage research and self-examination. For its own welfare, hospital administrators need to support extensive investigations. It would be important to note its history, behaviour and problems. Without this activity the field of hospital administration will have to resign itself to certain vagueness about its rights, privileges and responsibilities.

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Reports of Cases.

THE USE OF CORTICOSTEROIDS IN HERPES ZOSTER OPHTHALMICUS.

By D. S. BROWN, D.O.,
Wollongong, N.S.W.

THE treatment of the pain in herpes zoster ophthalmicus has always been a difficult problem. In our practice, Dr. John Maude and I have each recently treated a patient suffering from herpes zoster with dexamethasone given intravenously and then orally, and considered that the rapid relief of pain was worth reporting.

Case I.

A man, aged 56 years, developed herpes zoster ophthalmicus on the left side six days after a heavy beam had fallen on the left side of his head. He had œdema of the left eyelids, with keratitis and severe pain. "Decadron" was given intravenously in a dosage of 4 mg. per day for three days, with two tablets, each of 0·5 mg., three times a day by mouth, and within two days the pain and œdema had subsided. Two weeks later the patient himself ceased takings the tablets, and the pain and lid œdema recurred within a day, to disappear a day after he began taking the tablets again.

Case II.

A man, aged 76 years, had had the pain and eruption of herpes zoster ophthalmicus for five days when he was first examined. One intravenous injection of 4 mg. of "Decadron" was given, and this was followed by 0·5 mg. three times a day by mouth. Relief of pain was experienced in 24 hours.

Case III.

A woman, aged 75 years, who had had left herpes zoster ophthalmicus for a week, presented with left acute glaucoma, which settled with eserine and "Diamox". One intravenous injection of "Decadron", and the exhibition of "Decadron" tablets three times daily, were followed by relief of pain within 24 hours.

Comment.

A notable feature of this form of treatment is the absence of post-herpetic neuralgia, which in itself can be almost as distressing as the disease itself. We believe that this treatment is of real value in this disease.

KERATOACANTHOMA FOLLOWING TRAUMA.

By JOHN F. MCCAFFREY, M.B., M.S.,
Department of Surgery, University of Queensland.

IN 1930, Dupont drew attention to a condition which he called *"kyste sébace atypique"*. Today, this condition is known as keratoacanthoma or molluscum sebaceum. Its interest lies in the fact that, whilst having a number of the clinical and histological features of squamous-cell carcinoma of the skin, it is self-limiting in its course.

This course tends to be rapid. The face is the site of choice (Thompson, 1958), and once the nodule becomes evident, it rises very quickly above the skin surface. After about six weeks the lesion reaches its maximum size, and if it is untreated, regresses by the end of four or five months, leaving a slightly depressed scar in its place. With the passage of time this scar becomes less noticeable.

The following case is reported because the lesion followed localized trauma.

Clinical Record.

Mr. A., aged 53 years, a foreman stevedore, was referred for treatment on December 24, 1959. Five weeks previously, a projecting piece of stout wire had penetrated the skin of the calf of his left leg. The penetration had not been very deep, and the patient said that only a drop of blood appeared at the site of puncture. The small wound had healed completely in a few days. Ten days after the incident, the patient noticed a "pimple" at the same site. This was not painful, but he treated it with hot compresses, as he thought it was an infection. However, the lesion continued to grow, and after a few weeks it developed a scaling centre, which the patient tried to "scrape away". He was successful in removing a core of tissue, and the lesion bled a little. The core quickly reformed, and as the lump had now reached a diameter of about an inch, he came along for treatment on December 14.

A biopsy of the lump was carried out on the same day, and the report on this was "squamous-cell carcinoma". It was considered that in this situation the tumour would be better treated by surgery than by irradiation, and he was referred for surgery on December 24.

When the patient was seen on that date, the lump was approximately 1·25 inches in diameter. It was situated on the back of the left calf, slightly to the medial side. It had heaped up edges which were not translucent. There were no small vessels running over these edges. The centre of the lump was replaced by a core of scaling brown taking the tablets, and the pain and lid œdema recurred was very slightly indurated. The draining lymph glands were not enlarged.

It was thought that the lesion was a keratoacanthoma, and surgery was postponed pending review of the biopsy slides. It was impossible to be sure from these whether the lesion was malignant or not, and it was decided to treat the lump as being malignant. Accordingly, on January 14, 1960, wide excision and immediate skin graft of the area was done. The patient was discharged from hospital five days after operation, and was able to return to work ten days later. The pathology report on the excised specimen was keratoacanthoma, with no evidence of malignancy.

Discussion.

The cause of keratoacanthoma is completely unknown. There has been some interesting work done recently on the virus origin of these lesions, but this is far from convincing. The same may be said of attempts to produce them by the local use of tar and anthracene compounds. In the case reported, trauma appears to have been the cause. The piece of wire which caused the original injury was protruding from a coil of unused wire, and had not been in contact with tar or similar substances.

Acknowledgements.

I am indebted to Professor Neville Sutton for permission to treat this patient. Dr. Alan Knyvett, Acting General Medical Superintendent of the Brisbane Hospital, has allowed me to quote from hospital records.

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Reviews.

Mackie & McCartney's Handbook of Bacteriology: A Guide to the Laboratory Diagnosis and Control of Infection. Edited by Robert Cruickshank, M.D., F.R.C.P., D.P.H., F.R.S.E.; Tenth edition; 1960. Edinburgh and London: E. & S. Livingstone Limited. 8½" × 5½", pp. 992. Price: 40s. (English).

THIS book, successive editions of which have won the attachment of a generation of laboratory workers, now appears in its tenth edition. Since the death of Professor Mackie in 1955, and the recent retirement of Dr. McCartney, the worthy duty of editorship has been undertaken by Robert Cruickshank, Professor of Bacteriology in the University of Edinburgh. Eight members in his staff are named as collaborators, and the sections of the book allocated to each for amplification and revision are clearly indicated.

While the retention of the original title, appropriate when first bestowed but now too modest, is desirable, the scope of the book is more adequately defined by the subtitle; it is indeed a well-planned guide to the laboratory diagnosis and control of infection. The tripartite character, from which no edition has yet departed, has been retained, and the book may be described as a trilogy in which the subjects of (i) microbial biology—infection and immunity, (ii) technical methods and (iii) pathogenic and commensal microorganisms are presented lucidly and concisely, with clarity and ease of reading unimpaired by the necessity for brevity.

Inevitably the age of chemotherapy and antibiotics has required expansion of the book to accommodate descriptions of new techniques, and laboratory workers who may be labouring under the burden of apparently endless sensitivity tests cannot fail to obtain help from the treatment given these procedures in Section II of the book.

Section III is notable for a discussion of viruses, which should prove helpful to workers of some experience and invaluable to the neophyte in virology. Methods of proved efficacy in virus cultivation are given prominence commensurate with their importance. No less than eight chapters are allotted to viruses, and after them the bacteriophages are well placed and equally well treated; "phage typing", particularly as applied to *Salmonella typhi* and staphylococci, is clearly described.

Professor Cruickshank and his colleagues are to be congratulated, and the tenth edition will confirm "Mackie and McCartney" in its abiding place in university, hospital and public health laboratories.

A Textbook of Medicine. Edited by Russell L. Cecil, M.D., Sc.D., Robert F. Loeb, M.D., Sc.D., D.Hon.Causa., LL.D.; associate editors: Alexander B. Gutman, M.D., Ph.D., Walsh McDermott, M.D., and Harold G. Wolff, M.D.; Tenth edition; 1959. Philadelphia and London: W. B. Saunders Company. Sydney: W. Ramsay (Surgical) Limited. 10" x 6¾", pp. 1665, with 182 figures. Price: £8 5s.

CECIL AND LOEB'S textbook of medicine has been well known to medical undergraduates and medical practitioners for 33 years, though more particularly in Australia during the last 20 years. In these latter years it has been the standard reference book for the large majority of those studying medicine either as undergraduates or as graduates. The tenth edition has been brought out, and this keeps the book completely up to date. A number of new syndromes and diseases have been described in the last four years; 36 such additions have been made to the text.

One hundred and sixty-four authors, some of them new to this book, have contributed to the text. Many very well-known names appear in this list of contributors, and all are authorities in their particular fields.

The general setting out of the contents remains unchanged, the chapters being arranged in systems and types of disease. The index, which occupies 90 pages, is a particularly useful part of the book, and is obviously intended to be used extensively. By its use it is readily possible to find information about any condition, together with suitable cross references.

There is no doubt that this latest edition maintains the high standard of this textbook. Whilst it is not altogether suitable as a basic book for learning medicine, at the undergraduate level, it is an excellent reference book, in which the student can expect to find any detailed question answered. As we have said in previous reviews, the main disadvantage for students is the occasional difference of opinion in different sections of the book produced by virtue of its multiple authors.

The editors, contributors and publishers are to be congratulated on producing this further edition of a textbook that has remained in the forefront for so many years.

Roentgenographic Studies on Epiphysial Growth and Ossification in the Knee. By Sven Scheller; *Acta Radiologica.* Supplementum 795; 1960. Stockholm: Acta Radiologica. 10" x 7", pp. 304, with many illustrations. Price: Sw. Kr.35.

THIS monograph, from the Röntgen Diagnostic Department and the Institute of Anatomy of the University of Gothenburg, Sweden, upholds the enviable reputation of Swedish workers in X-ray diagnosis for thoroughness and high standards. Many X-ray studies of normal processes of development and function have been made by Swedish observers, and these provide essential basic facts for estimating abnormality. The purpose of the present study was to define normal variation in the development of the distal femoral and proximal tibial epiphyses. Observations are made for each epiphysis on (i) dimensional growth, (ii) morphogenesis and (iii) ossification pattern. Special attention is paid to the so-called accessory ossification centres, in order to establish whether they may be concerned in forming the detached bodies seen in osteochondritis dissecans. For each epiphysis there is a most complete discussion of development and variations, followed by many illustrations, both line drawings to demonstrate specific points and radiographs for each year of life from one to fifteen years. These diagrams and radiographs provide the best atlas of development of the knee joint in the literature at present.

The final section of the volume discusses the problem of osteochondritis dissecans and accessory ossification centres. Two points of interest emerge from this discussion. First, osteochondritis dissecans of the distal femoral epiphysis is probably often diagnosed in error, the real condition being an accessory ossification centre which will, of course, fuse with the rest of the epiphysis in time. Secondly, the present work does not support the theory elaborated in several papers by Ribbing that the detached fragments in osteochondritis dissecans have developed from superficially located accessory ossification centres. The author's view is that in the knee, osteochondritis dissecans is due to transchondral fracture caused by impingement of the femoral condyles on the tibial spines.

The volume concludes with a summary and a comprehensive bibliography. It is a valuable contribution to knowledge and understanding of the varied and puzzling appearances which may be found in radiographs of the knee in children.

Social Rehabilitation of the Subnormal. By Herbert C. Gunzburg, M.A., Ph.D. (Vienna), F.B.Ps.S.; 1960. London: Baillière, Tindall and Cox. 8¾" x 5½", pp. 282, with illustrations. Price: 27s. 6d. (English).

DR. GUNZBURG is an acknowledged authority in Great Britain on mental retardation, particularly in the field of training for return to the community of the mildly mentally handicapped young adult. The progress of the workshop under his guidance at the Monyhull Hospital, Birmingham, is shown by the success rate of their training programme and by the extension of this programme to the moderately mentally handicapped group, as many of the mildly handicapped group find employment in local industry, and are discharged from hospital to live at home or in hostels.

This book explains in detail the training the mildly and moderately mentally handicapped young adult should receive both in workshop behaviour and in social behaviour. It is of great interest and assistance to all professional workers in the field of mental retardation who have such persons under their care and guidance. It emphasizes the modern approach to this problem, and should be read by all doctors, social workers, educationalists and psychologists, so that their advice to parents of the mentally handicapped may offer some hope for the future, and that placement in an institution should not be so readily recommended in the early years, except for the severely mentally handicapped child or for special family or social reasons.

The book deals clearly with the problems of assessment of intelligence and social development, and offers a practical form of assessing educational and social abilities. It is also helpful in its advice in the handling of the mentally handicapped adolescent and young adult, and stresses that these persons must be taught self-confidence, self-care, recreational activities and social graces as well as a work routine if they are to cope successfully with life in the community. It is admitted that many of the moderately handicapped group will require a sheltered environment and supervision throughout life; but the majority can nevertheless be taught to do a useful job, earn a wage and conform to the social standards of the community.

Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"Introduction to Dental Anatomy", by James Henderson Scott, D.Sc., M.D., L.D.S., and Norman Barrington Bray Simons, M.Sc., B.D.S.; third edition, 1961. Edinburgh and London: E. & S. Livingstone Ltd. 8¾" x 5½", pp. 400, with illustrations. Price: 45s. net (English).

"Cancer in Childhood and Youth", by Sigismund Peller, M.D., F.R.S.H.; 1960. Bristol: John Wright & Sons Ltd. 8¾" x 5½", pp. 304, with 29 illustrations. Price: 42s. (English).

"Sedan's Re-Educative Treatment of Suppression Amblyopia: Being an abridged English version of Jean Sédan's *Post Cure de l'Amblyope Rééduqué*", by T. Keith Lyle, C.B.E., M.D., M.Ch., M.R.C.P., F.R.C.S., Cynthia Douthwaite, D.B.O., and Jill Wilkinson, D.B.O.; 1960. Edinburgh and London: E. & S. Livingstone Ltd. 11" x 8½", pp. 148, with illustrations. Price: 25s. net (English).

"Dentistry for the Pre-School Child", by G. N. Davies, D.D.S. (N.Z.), and Richard M. King, B.D.S. (N.Z.), M.S. (Univ. of Mich.); 1961. Edinburgh and London: E. & S. Livingstone. 8½" x 5½", pp. 276, with illustrations. Price: 32s. 6d. (English).

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The Medical Journal of Australia

SATURDAY, FEBRUARY 25, 1961.

CHILD GUIDANCE CENTRES AND THE COMMUNITY.

THE term child guidance clinic was first coined in 1922, although the concept of centres for the guidance of maladjusted children had steadily developed in the years following the establishment of the Chicago Juvenile Psychiatric Institute in 1909. Although an attempt was made at this institute to consider the psychiatric, psychological and social aspects of each child studied, a number of years had to elapse before the prototype of the modern child guidance clinic appeared. This had to await the training of sufficient child psychiatrists, and more particularly the training of psychiatric social workers, for which special provisions were made in a number of places, first in the United States of America and later in England. The early 1920's saw the appearance of a significant number of clinics in different parts of the United States, and these functioned more or less as the clinic of today. In 1927 the first clinic on the American pattern was established in England in East London by the Jewish Health Organization; others soon followed. In the early 1930's, largely as a result of the activities of Professor Berry, a clinic was established at the Children's Hospital, Melbourne. Thus the modern child guidance clinic, with the team consisting of a child psychiatrist, a clinical or educational psychologist and a psychiatric social worker with, perhaps, the addition of a medical or non-medical psychotherapist and a speech therapist, was originally an American scheme for providing help for the maladjusted child, which gradually spread over the English-speaking world.

The story of the first appearance and subsequent multiplication of child guidance centres is one of the unbounded energy and enthusiasm of the pioneers, and of the loyal and active support of numerous voluntary organizations in the respective countries. The Commonwealth Fund of America provided comparatively large sums of money in the early days for the salaries of the staff of some centres, for the training schools for social workers and for the bringing of people from other countries to America to study the workings of clinics. A disappointing, if interesting, feature of the history of the child guidance centres therefore is the comparative failure of these new medico-social services to expand and develop in the manner forecast by the original sponsors. It is doubtful if any community in the English-speaking world today has the adequate cover of one child guidance clinic for each 45,000 children, an estimate made by C. P. Blacker;[1] many large communities are without services of any kind, and the long waiting lists, up to six months, for clinics in Australia are a clear indication of the inadequacy of the service here. The reasons for the failure of clinics to expand to meet the demand probably vary in the different countries, but an important factor in all places must be the faintness of the voice of public demand. The community becomes deeply concerned and not a little panicky about a physical disease like poliomyelitis, which usually affects but a small percentage of the population, but seems to remain aloof from the problem of the maladjusted child, the delinquent and the homosexual, which, according to some authorities, exist in large numbers. Lord Beveridge once suggested that there is an attitude of "it is their own fault, let them get out of it, I am not involved" towards these conditions. Members of the medical profession played an active role in most countries in getting clinics started; now that there are a few clinics functioning, there seems to be an air of complacency.

Against this background it is of interest to read the report of a Seminar on Child Guidance Centres convened by the Regional Office of the World Health Organization and held in Lausanne from September 18 to 29, 1958.[2] The aim of the seminar was "not to lay down rigid universal standards, but to make each country conscious of its own special objectives in the field considered and encourage it to draw on the knowledge and experience of others for assistance in attaining these objectives". It is noteworthy that the working language of this seminar was French, and that the participants came from Belgium, Greece, Italy, Portugal, Spain, Switzerland, Turkey and Yugoslavia. The list of lecturers and discussion leaders suggests that English was the mother tongue of only one member, Dr. Donald Buckle, formerly of Melbourne, one of the co-authors of the report. Apparently it was not the intention of the organizers of the seminar to force upon the Europeans the Anglo-American style of child guidance clinic, although the report describes the functioning and training of the personnel for that type of clinic in considerable detail. The initial reluctance to highlight the American product is understandable when it is realized that in England and America not all psychiatrists and psychologically orientated pædiatricians support the concept of the child guidance centre with the team approach to the maladjusted child. A number of highly successful practitioners prefer to operate alone, with perhaps the occasional assistance of a psychiatric social worker. These doctors consider that the non-medical specialist has only an occasional role in the management of the disturbed child and his parents. From footnotes in the report of the European seminar it is apparent that this view was expressed at least by a minority of the participants.

The majority of modern child guidance centres have a similar organizational structure. In the case conferences the psychiatric, psychological and psychopathological, sociological and educational aspects of each case are presented by the various members. This has its advantages

[1] "Neurosis and the Mental Health Services", 1946, Humphrey Milford, Oxford University Press.

[2] "Child Guidance Centres", by D. Buckle and S. Lebovici; 1960. Geneva: World Health Organization. 9¼" x 6¼", pp. 134. Price: £1.

for both the child and the staff. No matter how well trained or widely experienced he may be, the psychiatrist cannot hope to cover adequately all aspects of each case. The consideration of the various points obliges the team and its director to rise above the particular technical and theoretical basis of each individual specialist. Teamwork also ensures the professional advancement of each member. There can, however, be no real teamwork unless the team becomes a reality in spirit and remains not just a group of people who meet occasionally. This requires much of each member and most, perhaps, of the psychiatrist. Professional people start to learn this type of group activity during their training in democratically conducted discussion groups and tutorials. Until comparatively recently these have not been a feature of the European educational system, and it is unfortunate that in the report of the seminar, in an otherwise excellent section on the training of the members of the team, sufficient emphasis is not given to this most important point.

As we stated earlier, public support is essential for the expansion of public services, and this depends in the long run on the capacity of the particular services to "deliver the goods". We all think child guidance clinics are doing good work, but how accurate is our knowledge—is it based on wishful thinking or on sound facts? Although child guidance clinics have been operating for about 40 years, few surveys have been made either of the extent of the problem the clinics are designed to meet or of their successes. One of the few surveys in Australia to be published is just to hand and is an account of the first year's activities of the Division of Welfare and Guidance in Brisbane. This gives a list of the conditions which brought some 623 children to the Mary Street clinic in the eight months from October, 1959, to June, 1960, and some details of the working of the clinic. It is unfortunate that the need for review and audit was apparently not considered by the European seminar. The child guidance clinic should not be considered as an isolated unit; to be successful it must be part of a comprehensive programme which extends from the community to the provision of a top level training institute, such as the Tavistock Clinic in London. Within the community awareness of the problem and of the services available is essential, and we have every reason to hope that the general medical practitioner may occupy a key position. He should be equipped and willing to recognize and handle, within the limits of his capacity, the maladjusted infant and child in the larval stages and to know when to seek further help. The child guidance clinics should have an effective feedback mechanism, so that they keep the general practitioner fully informed. To complete the programme a central training institute would seem to be essential, not only to provide training but also to cover an extensive consultative service. Both of these features have undoubtedly contributed significantly to the success of the Tavistock Clinic in London. The European seminar, apparently, did not discuss this phase of the work of handling the maladjusted children. Viewed against Australian experience over the past 30 years, it would seem that, since this is probably our most pressing need, it could also soon become an essential requirement for a satisfactory comprehensive service in European countries.

Current Comment.

ADVICE FOR VISITORS TO THE UNITED KINGDOM: A CORRECTION.

OUR attention has been drawn to an ambiguity in a statement about the Commonwealth Medical Advisory Bureau in London, published in this column in our issue of February 4, 1961. In referring to the "Summary of Regulations for Postgraduate Diplomas and of Courses of Instruction in Postgraduate Medicine" issued by the Bureau, we stated that copies were available at the offices of the several Branches of the B.M.A. in Australia and of the State post-graduate organizations. It appears that only one copy is available at each office, for consultation at the office, and copies are not available for distribution, as our previous statement could be taken to imply. We apologize for any inconvenience caused by this ambiguity.

PURPOSE IN LIVING PROCESSES.

TELEOLOGY is defined in the Concise Oxford English Dictionary as "the view that developments are due to the purpose or design that is served by them". In the victory of Darwinism over the Lamarckian theories, this view came to be regarded as a major heresy in biological thinking. The controversy is most simply illustrated by the familiar story of the giraffe. To say that the giraffe has a long neck because it tried to reach the highest leaves is teleological heresy; the orthodox view is that the giraffe eats the highest leaves because it has a long neck. The teleological view is still looked on with grave suspicion by most biological scientists; however, there have always been a few independent thinkers who have regarded the too rigid condemnation of teleology as itself a source of serious error.

Frederic Wood Jones[1] and William Agar[2] said repeatedly that the greatest medical scientists were those who saw purpose in all living processes. In the Bancroft Memorial Lecture in 1931, Wood Jones said:[3] "To admire the perfection of an adaptation is to be suspected of a belief in teleology, and . . . it were better that a man should believe in a geocentric universe or in a flat earth than that he should be branded a teleologist." The anti-teleological fashion has persisted in the medical sciences, and many physiologists and pathologists exclude the idea of purpose from their teaching. Yet a great physiologist, C. L. Evans,[4] once wrote: "Adaptation should be adopted by physiologists as a law like those of conservation of matter and of energy."

At the American Association for the Advancement of Science in 1956, R. W. Gerard[5] contributed to a symposium entitled "Fundamental Units and Concepts of Science". His mechanical explanations of biological happenings were criticized by Michael Polanyi,[6] another contributor to the symposium. Polanyi said: "The fact that a so learned, ingenious and imaginative survey of living beings should deal so perfunctorily with some of the most important questions concerning them [indicates] a fundamental deficiency in biological thinking." If a rat laps up a sweet solution, Polanyi writes, the rational explanation is that the rat likes the sweet taste; yet tasting and liking are facts physics and chemistry cannot explain. He states that the current ideal of "scientificality" would destroy biology but for the wise neglect of consistency by its supporters: "It is perilous to rely indefinitely on a conceptual framework that denies reality to the things we actually believe in."

[1] "Life and Living", Kegan Paul, London, 1939.
[2] "A Contribution to the Theory of the Living Organism", Melbourne University Press, Melbourne, 1943.
[3] MED. J. AUST., 1931, 2: 251 (August 29).
[4] *Lancet*, 1928, 2: 535 (September 15).
[5] *Science*, 1957, 125: 429 (March 8).
[6] *Science*, 1957, 125: 480 (March 15).

More recently S. V. Waife[7] has written an editorial "In Defence of Teleology"; he compares it with a woman you like to keep company with but do not like to be seen with. He pleads for a reexamination of this attitude. In metaphysics, Waife writes, the concept of order in the universe implies an orderer; as applied to medicine it involves a rational explanation of phenomena based on evidences of purpose. Waife points out that teleological thinking is universal though the thinkers usually repudiate the word. Scientists are often stimulated by apparently inexplicable phenomena and try to find out the "why" of them; this implies a fundamental belief in purpose. The researcher, Waife holds, needs signposts in the blind wilderness of facts. He is not merely interested in the effect of A on B; he hopes A affects B in such a way because it fits in with a preconceived notion that some such relationship exists. Some studies are biased because of too strong a teleological leaning in those of weak fibre. But that does not negate the constructive value of teleological thinking when properly used.

WORLDWIDE VITAL STATISTICS.

THE ninth annual statistical report to be published by the World Health Organization[1] sets out in some 700 pages the demographic and health conditions of the countries of the world.

This new annual report contains a number of innovations. In the first part, for instance, statistics of causes of death have been expanded. In the tables on causes of death figures have been given for deaths among young children by sex and by each year of age up to four years. Also a new table on the cause of infant mortality by age has been included. Among the other important subjects which have been either expanded or newly introduced in this volume are cardio-vascular diseases, malignant neoplasms, maternal mortality, and accidents according to the nature of injury.

In the second part of the volume seasonal statistics of notifiable communicable diseases are given, with the distribution by sex and by age for certain of these diseases.

The editors have followed the custom, which has little to commend it, of giving the deaths per hundred thousand. In the remarks which follow we shall use deaths per thousand *per annum*. It would have surprised a nineteenth century demographer to find the crude death rates throughout the world of the order of seven to ten or in a few cases thirteen — examples are: Australia 9·1, Fiji 7·4, New Zealand 9·0 for non-Maoris, 9·4 for Maoris, Iceland 7·2, United Kingdom 11·7, Scotland 12·0, Norway 8·7, United States 9·4; perhaps, however, the death rates for females at ages 5 to 9 years would have caused greater surprise: Canada 0·5, United States 0·4, United Kingdom 0·3, Sweden 0·3, Australia 0·4, and New Zealand 0·3. A number of countries show a peak of mortality in early male adult life, for example Sweden and Australia, violent and accidental deaths and drownings being the cause for this peak. Australia ranks high for its death rates from automobile accidents.

The third part, which relates to statistics of health personnel, hospital establishments and vaccinations, has also been rearranged and extended. A distinction is made between physicians proper and other practitioners entitled to provide treatment under particular and prescribed conditions in certain territories of Africa, Asia and Oceania. The data also distinguish between private practitioners and physicians in the public health service. The number of inhabitants of each country or territory per physician is also given; the figures show vividly the still urgent need for medical personnel in certain areas of the world. Statistics of nursing and midwifery personnel have also been expanded.

Statistics on vaccinations cover six major communicable diseases. An attempt has been made, for the first time, to give details of the population groups vaccinated and of the units to which the figures refer (i.e., primary vaccination or revaccination).

In all, this year book helps to make a number of comparisons between countries, which would be difficult without its aid. It will help also to standardize statistical findings and make the statistics collected more suitable for comparisons. It gives much information of value to administrators and should serve as a useful source book for those interested in human ecology.

VITAMIN CONTENT OF CITRUS PRODUCTS.

MANY people still believe that all vitamins are destroyed by canning. A moment's reflection will show that this is not true, since some vitamin concentrates come in tins. However, it is often difficult to find reliable information about any particular product, and for this reason an article by J. F. Kefford[1] of the C.S.I.R.O. on the nutritional value of processed foods made from citrus fruits is helpful.

Kefford begins with discussion of the nutritional properties of citrus juice. As with all fruits, the vitamin content of the juice varies greatly, being influenced by many genetic and horticultural factors. Among citrus fruits, the highest vitamin C content is found in the juice of sweet oranges (25 to 80 mg. per 100 ml.) and lemons (30 to 60 mg. per 100 ml.), and the lowest in mandarins (10 to 50 mg. per 100 ml). Citrus juices can be canned very efficiently, and the ascorbic acid content immediately after canning generally exceeds 98% of that of the fresh juice. At room temperature about 20% of the vitamin C content may be lost in one year, but flavour and vitamin content are well maintained in cold storage. Canned citrus juice is therefore an excellent source of vitamin C in the Antarctic. However, in Australia most citrus juice is used for the preparation of cordials and soft drinks. Under the pure food acts of the States citrus cordials are required to contain at least 20% of citrus juice, the balance consisting mainly of heavy syrup; citrus soft drinks must contain at least 3% of citrus juice, but sales tax regulations are so framed as to encourage a minimum of 5% of juice. As cordial is diluted 4 or 5 times before being drunk, the effective vitamin content of both cordial and soft drinks is small. It has only recently become possible, by the use of high vacuum evaporators, to prepare concentrated citrus juices without destroying the flavour. This concentrate has become popular in America in frozen form, which can be readily reconstituted by the addition of water to make a cool drink, indistinguishable in flavour or vitamin content from fresh juice. This has only very recently become available in Australia. Another recently developed product is strained citrus juices for infants, fortified with added vitamins, to bring the vitamin C content up to a minimum of 15 mg. per fluid ounce.

Fresh citrus peel actually contains more vitamin C than the juice, but it also contains an active ascorbic acid oxidase system, so that the vitamin is rapidly destroyed, especially when the peel is comminuted. For this reason candied peel contains virtually no ascorbic acid, and the nutritional value of marmalade is almost solely that of its sugar content.

A considerable number of other vitamins are found in citrus juice, but none of these are present in nutritionally significant amounts except inositol. Citrus fruits also contain a group of distinctive substances known as flavonoids, the principal ones being hesperidin in sweet oranges, mandarins and lemons, and naringin in grapefruits and Seville oranges. Citrus flavonoids have no known function in human nutrition, but they have recently come to be designated "bio-flavonoids" because of some evidence of pharmacological properties. Under this name they have acquired considerable popularity, though how far this is founded on any real pharmacological activity is still a matter of opinion.

[7] *Perspect. Biol. Med.*, 1960, 4:1 (Autumn).

[1] *Annual Epidemiological and Vital Statistics*, 1956; bilingual edition (French and English). World Health Organization, Geneva, 1959: 705 pages. Price: Sw.fr. 36, £3 or $12.00.

[1] *Food and Nutrition Notes and News*, 1960, 17: 51 (July-August).

Abstracts from Medical Literature.

GYNÆCOLOGY AND OBSTETRICS.

Post-Operative Vaginal Discharge.

W. H. RE MINE AND T. R. MURPHY (*Proc. Mayo Clin.*, September 16, 1959) discuss the use of streptokinase and streptodornase in the treatment of post-operative vaginal discharge. Odorous discharge from the vagina during the post-operative period develops occasionally in women who have undergone total abdominal hysterectomy or any of several vaginal operations, and may cause considerable concern to the patient and her friends. It is caused by collections of blood, bacteria and various quantities of necrotic material in the vaginal vault. Streptokinase is an activator of the plasma fibrinolysin and thus promotes fibrinolysis in exudate containing blood and serum. Streptodornase is a desoxyribonuclase and breaks down the nucleoprotein which makes up a large part of the coagulum and sediment in purulent exudate. The effectiveness of the combination of these two substances has been established in the management of hæmothorax and empyema. Outside the chest cavity, it is frequently employed to promote enzymatic *débridement* of wounds, etc., with considerable success. The authors state that this combination was used as the only local instillation for 100 women who had undergone operations for vaginal hysterectomy and repair of cystocele. The indication for its use was the post-operative presence of a profuse, foul-smelling vaginal discharge noticed by the patient or by her attendants. The method of application is described. The results were most gratifying, and in 87 of the women so treated the foul-smelling discharge was completely eliminated, there were no complications, and most patients obtained relief with only two instillations.

Multiple Squamous Cell Carcinomas Involving Cervix, Vagina and Vulva.

S. L. MARCUS (*Amer. J. Obstet. Gynec.*, October, 1960) reviews the relevant literature and presents a report on seven patients with multiple squamous cell carcinomas involving the cervix, vagina and vulva. With considerable rise of interest in the in-situ phase of carcinoma during the past quarter of a century, the concept of multicentricity of origin of carcinoma within a field bearing a neoplastic potential has been considered. In some instances this field has been a single organ, whilst in other cases paired organs of an organ system have been implicated. Any theory of multicentric origin based on common embryological derivation would apply to the cervix and the vagina.

Intestinal Endometriosis.

C. H. G. MACAFEE AND H. L. HARDY GREER (*J. Obstet. Gynec. Brit. Emp.*, August, 1960) report 29 cases of intestinal endometriosis among 803 followed cases of proved endometriosis and survey the literature of the subject. They find an incidence of 12% intestinal endometriosis among all reported cases of endometriosis. Eleven of their patients had bowel involvement without obstruction, 8 had obstruction, 5 had involvement of the recto-vaginal septum, and 5 had endometriosis of the appendix. Outstanding symptoms in patients without bowel obstruction were vague lower abdominal pain, rectal symptoms and dysmenorrhœa. In two of the patients with lesions of the bowel without obstruction, these were believed to be carcinomas, and were treated as such. In the remaining nine patients the intestinal deposit gave no further trouble after removal of both ovaries. Ten of these patients had pelvic endometriosis chiefly involving one or both ovaries. The authors quote numerous cases reported in the literature in which bowel was the only organ involved by endometriosis. Obstruction was acute in 6 out of 8 cases, and the site of obstruction was the ileum. Six of these patients had associated pelvic endometriosis and 2 had none. The types of lesions causing obstruction in these cases were annular, polypoid submucosal infiltration, cicatrization with angulation, and combined impingement and kinking. The authors note that the incidence of obstruction is 27% in reported cases of bowel endometriosis. In their 5 cases of endometrioma of the recto-vaginal septum, rectal pain either pre-menstrual or menstrual in time, uterine bleeding, lumbar pain and infertility were common symptoms. One patient had post-menopausal endometriosis of the bowel, and an incidence of 7% of post-menopausal cases in the literature draws attention to the fact that aberrant endometrial tissue may become activated after the menopause. The 5 patients with endometriosis of the appendix had symptoms similar to those of acute appendicitis. The authors consider that successful diagnosis of endometriosis pre-operatively and at operation depends directly on the threshold of suspicion of the clinician. The following points are stressed as helpful in arriving at a correct pre-operative diagnosis: the taking of a detailed clinical history; the significance of menstrual periodicity of many of the intestinal symptoms and signs; unexplained infertility; loss of weight; increasing dysmenorrhœa; the illuminating nature of clinical, radiological and proctoscopic examinations undertaken at the time of menstruation; the significance of a history of previous laparotomy without relief of symptoms. At operation the differential diagnosis of endometriosis of the bowel from carcinoma may still be difficult, but the stricture does not tend to encircle the bowel as in carcinoma, the tumour can be lifted up like a button on the bowel wall and there are no enlarged regional lymph nodes. Opinions vary as to the best method of treatment of intestinal endometriosis. Obstruction must be relieved either by a short-circuiting operation or by bowel resection. When there is no obstruction, castration is favoured by some surgeons and bowel resection is favoured by others. The surgical treatment depends on whether there is associated pelvic endometriosis and on the age of the patient. If the patient is over 40 years of age radical pelvic surgery is recommended. In the young married woman pelvic endometriosis is treated conservatively if possible and the patient is encouraged to produce a biological cure by becoming pregnant. Radiotherapy should be reserved for extensive recto-vaginal lesions in young women where the alternative would be an abdomino-perineal operation with a permanent colostomy. The authors analyse types of treatment given in 102 reported cases of intestinal endometriosis. Reproduction was preserved in 51 patients, castration by surgery or X rays was performed in 51, and bowel was resected in 67 cases.

Dissemination of Cancer Cells during Uterine Curettage.

S. ROBERTS *et alii* (*Surg. Gynec. Obstet.*, July, 1960) report the isolation of cancer cells from the blood stream during uterine curettage. Ten patients with various malignant and benign diseases of the uterus were studied during uterine curettage by serial blood samples which were drawn at frequent intervals before, during and after curettage. Each blood sample was subsequently examined for cancer cells. No abnormal cells were isolated from the blood of the three patients with benign diseases, or the two patients with epidermoid carcinoma or carcinoma-in-situ of the cervix. Cancer cells were isolated from blood samples drawn during curettage of four out of five patients with malignant disease involving the endometrium. In three of these cases cancer cells were demonstrated only in samples taken during curettage—none were found in samples drawn before or immediately after curettage. The authors conclude that the vascular dissemination of cancer cells during curettage is more than a theoretical possibility in patients with malignant diseases involving the endometrium.

Intraepithelial (Stage O) Cancer of the Cervix.

R. T. PARKER *et alii* (*Amer. J. Obstet. Gynec.*, October, 1960) present a cumulative study of 485 gynæcological and obstetrical patients with intraepithelial cancer of the cervix. In 70,584 gynæcological patients 421 intraepithelial cancers of the cervix were diagnosed (an occurrence rate of about 0·60%) and 1245 invasive cancers (an occurrence rate of 1·77%); in approximately 10,053 obstetrical patients 64 intraepithelial lesions were diagnosed and 31 invasive cancers (occurrence rates of 0·64% and 0·31% respectively). The percentage of patients with intraepithelial carcinoma below 30 years of age was 18, and 57% were below 40 years. The average age of 485 patients with intraepithelial cancer was 39·4 years, as against 49·1 years for the 1276 patients with invasive cancer. The authors state that intraepithelial cervical cancer has no symptoms and no characteristic appearance. Examiners recorded 86% of the cervices as "benign" and 14% as "malignant" or "questionably malignant". Cold-knife conization of the cervix was the diagnostic procedure of choice in cases of a clinically clean cervix that showed physiological atypia, and to exclude invasion in the presence of intraepithelial cancer. The authors state that treatment must be individualized and directed towards removal of the diseased tissue with preservation of physiological function as far as possible.

Of the 361 patients who had definitive therapy, nine had persistent atypical cells after treatment. One of these patients developed intraepithelial cancer in the vaginal cuff and one patient developed invasive cancer in the vaginal wall. Ninety-four patients had no operative procedure other than the taking of multiple punch biopsy specimens (four patients) and cold knife conization (90 patients). Eighteen patients had intraepithelial cancer in cervical stumps and each was treated by total vaginal removal of the cervical stump with a vaginal cuff. In 282 cases the patient underwent total hysterectomy; in 134 vaginal hysterectomy was performed, and in 148 abdominal hysterectomy. The authors consider that the ovaries should be conserved in patients under 45 years of age. It is their policy to perform biopsy or conization on any pregnant patient whose cytological smears are atypical and in any case of a cervical lesion that is clinically suggestive of invasive cancer.

Polycystic Ovarian Disease.

T. N. EVANS AND G. M. RILEY (*Amer. J. Obstet. Gynec.*, November, 1960) report on 40 patients with a diagnosis of polycystic ovarian disease (Stein-Leventhal syndrome). All were subjected to ovarian wedge resections, which resulted in ovulatory cycles in 36. Thirty-seven pregnancies subsequently occurred in 21 patients. All patients had normal excretory rates for œstrogen and gonadotropin. Levels of 17-ketosteroids were normal or slightly elevated. Pregnanediol levels were comparable to those found during the follicular phase of a normal menstrual cycle. Experimentally, the authors produced polycystic ovaries in rats by several methods which permitted continuous exposure of the ovaries to follicle-stimulating hormone without sufficient luteinizing hormone for ovulation and luteinization. Collation of the clinical and experimental findings suggests that the development of polycystic ovaries may result from continued exposure of the ovaries to gonadotropic stimulation which is predominantly, but not exclusively, follicle-stimulating in nature. A succession of follicular phases, uninterrupted by ovulation and corpus luteum formation, results in an accumulation of atretic follicles. The stimulated follicles produce œstrogen in a relatively continuous manner still subject to a reciprocal relationship with pituitary gonadotropin production. The level of œstrogen rises until eventually the output of gonadotropin is depressed. Excision of many of the œstrogen-producing cystic and atretic follicles results in a sudden fall in production of œstrogen. The resulting increase in gonadotropin stimulates a new crop of follicles, with one destined for maturation without opposition from the œstrogen of the excised atretic follicles. Thus a more normal relationship is established between the pituitary and the ovaries.

Basal Body Temperature Recordings in Gynæcology and Obstetrics.

F. BENJAMIN (*J. Obstet. Gynæc. Brit. Emp.*, April, 1960) reviews the basal body temperature recordings on 2000 graphs of 900 obstetrical and gynæcological patients during the past eight years. The uses of this investigation in modern practice are discussed. It has been used extensively since 1944 to determine the time of ovulation, and has the advantages of being simple, inexpensive and effective. The author enumerates and briefly describes the routine uses of the normal basal temperature chart in contraception, infertility, irregular menstruation, dysmenorrhœa, endometriosis, abnormalities of pregnancy and graphs for research purposes. Many illustrative examples are given. Basal temperature records indicating the date of ovulation offer a scientific method of birth control and are of particular advantage when menstruation is irregular. The post-ovulatory phase is considered a "safe period", while the pre-ovulation time is not as certain. Basal temperature graphs on infertility patients may show failure of ovulation, infrequent ovulation and ovulation during menstruation. The optimum time for attempts at conception and the planning of artificial insemination are regulated by this investigation. The persistent absence of ovulation as noted in the temperature graphs may prompt the gynæcologist to search for other pelvic causes of infertility not previously suspected. In cases of irregular menstruation, no matter how long or short the phase is before ovulation, the post-ovulation phase is always 13 to 15 days. Many of these patients are prone to habitual abortion and the keeping of a graph will show when pregnancy occurs and when preventive treatment can be commenced. Primary dysmenorrhœa can be relieved by inducing non-ovular cycles. The minimal dose of œstrogen to inhibit ovulation can be determined by basal body temperature studies. The author considers that certain cases of endometriosis, otherwise unrecognized, may be diagnosed by pyrexia during menstruation. In pregnancy, basal temperature studies are of help in indicating the time of conception and so pointing to the expected date of delivery, or beyond this the consideration of postmaturity. Amenorrhœa without pregnancy, threatened abortion, missed abortion or the continuation of pregnancy in the presence of vaginal bleeding may be elucidated by temperature records. Observations on temperature records of patients with hydatidiform mole and ectopic pregnancy are presented. Temperature patterns throughout normal pregnancy and during the few months after delivery, and ovulation in young girls before and soon after the menarche are discussed.

Surgical Induction of Labour for the Contracted Pelvis.

M. D. BLACK (*J. Obstet. Gynæc. Brit. Emp.*, April, 1960) reviews the management of contracted pelvis by surgical induction of labour, gives the results obtained in a large maternity service, and assesses the safety for mother and child with this type of treatment. This technique fell into disrepute through the danger of prematurity to the child and of sepsis to the mother in comparison with the relative safety of Cæsarean section. It has been reintroduced in Lanarkshire hospitals, and during the five years since 1950, 337 of a total of 618 patients with contracted pelvis were treated by induction of labour. The remaining 281 patients were treated by trial labour or elective Cæsarean section. The routine adopted by the author was as follows: all patients with contracted pelvis or suspected contracted pelvis were admitted to hospital at the thirty-eighth week and assessed under anæsthesia; radiological pelvimetry was carried out before this date when possible; the membranes were ruptured, irrespective of the condition of the cervix, provided that there was no obvious disproportion, that the fœtus was of reasonable size, that the presentation was by the vertex, that the patient was not an elderly primigravida, and that Cæsarean section had not been performed on more than one occasion previously. The forewaters were then ruptured. There were no maternal deaths in cases of surgical induction; there were two deaths among the 281 patients treated otherwise. There was no case of serious maternal infection in either group. In the cases of surgical induction there was a fœtal mortality of 14 (4·2%). The corrected fœtal loss was 2·7%. In the 281 cases in which labour was not induced there was an uncorrected fœtal mortality of 4·3% and a corrected fœtal loss of 2·9%. The main objection to surgical induction, according to the author, is the risk of producing small babies which will not survive. However, the percentage of premature babies in the "induced" group was only slightly higher than in the "non-induced" group. No attempt has been made in this study to classify exactly the degree of pelvic contraction, but the main categories were flat pelvis (340), sacral deformity (162) and contracted outlet (81). The incidence of Cæsarean section in the "induced" group was 11·3%, while in the "non-induced" group it was 55%; if the cases of elective Cæsarean section are eliminated from the "non-induced" group, this figure is reduced to 31%. The author concludes that surgical induction of labour for contracted pelvis gives results comparable to other types of management and could be used more widely with a view to reducing dystocia.

Primary Carcinoma of the Fallopian Tube.

P. I. KRUGMAN AND J. E. FISHER (*Amer. J. Obstet. Gynec.*, October, 1960) report two cases of carcinoma of the Fallopian tube. The reported incidence of this disease is 0·1% to 0·5% of all gynæcological cancers. Patients usually present with three main symptoms, (i) a profuse sero-sanguineous vaginal discharge frequently occurring in "gushes", (ii) cramping lower abdominal pain, (iii) abdominal enlargement or tumour. Bimanual pelvic examination will usually reveal a unilateral tender mass, although in one-third of reported cases the tumours were found to be bilateral. The results of vaginal cytology smears have been reported as positive in up to 60% of cases. These findings, particularly if the results of cervical and endometrial biopsy are negative, should make one suspicious of tubal carcinoma. The treatment is total abdominal hysterectomy and bilateral salpingo-oophorectomy with post-operative use of radiation; however, the latter is of doubtful value. Prognosis is very poor because of the difficulties in diagnosis at an early stage.

Brush Up Your Medicine.

STRESS INCONTINENCE IN THE ABSENCE OF PROLAPSE: PRE-OPERATIVE SELECTION.

STRESS INCONTINENCE of urine causing a patient to seek help is of two distinct types—either associated with, or apart from, genital prolapse. With the former type there is little argument regarding treatment. It is to the latter type that this paper is directed.

It may be difficult to decide whether or not surgical intervention has a chance of success; but there are certain prerequisites which should always be elicited.

General opinion amongst gynæcologists favours a mechanical upset in bladder function, rather than a primary sphincteric lesion, as the defect present in stress incontinence. If the sphincteric lesion was the prime factor, then the multitude of surgical procedures designed to lift or suspend the bladder, bladder neck and urethra would not produce the cures they do. A scheme of history-taking and investigations can be formulated on this assumption of a mechanical factor.

The history is of paramount importance, and on this alone the majority of cases can be selected for surgical intervention or rejected. For convenience, the history may be divided into the general history and the particular history of the incontinence.

General History.

The most common mechanical ætiological agent is parturition, and on this ground alone nulliparæ are always suspect. The details of the delivery are of no importance, but because of parturition, a mechanical stress has been present.

Neurological signs, such as retention of urine, foot drag, transient blindness, previous cerebro-vascular accident, etc., must be carefully sorted out. The important point with regard to these symptoms is the presence of the incontinence prior to the onset of these neurological signs.

The presence of the symptom prior to or after an anatomically successful vaginal repair for prolapse is strong evidence of this preexisting mechanical defect, and such patients constitute the majority seeking treatment in this group.

The Features of the Incontinence.

The Duration.

Stress incontinence, being mechanically produced, when once present will persist until the mechanical defect has been rectified. It is a persistent symptom not subject to spontaneous remissions, and presents whenever the patient is in the erect position. It may be initiated by any act raising intraabdominal pressure. These features of the incontinence are the most important factors in the history, and any deviation from this symptom sequence is suspicious.

Associated Urinary Symptoms.

The symptom of stress incontinence may be mimicked by extreme frequency, precipitancy or urgency of micturition, and careful and detailed interrogation is necessary to differentiate this group of symptoms. Frequency both day and night, urgency, precipitancy and scalding are often due to a combination of infection and diminished bladder capacity. Information may be gained by determining the volumes of urine which are passed both day and night, for the polyuria of diabetes or disturbances of renal function may resemble stress incontinence. Nocturia and bed-wetting are not present with a mechanical lesion. Pre-micturition pain is a suspicious symptom, and is often due to a low bladder capacity or to chronic interstitial cystitis.

Routine Gynæcological Examination.

Stress incontinence must be demonstrable. With the patient in the left lateral position, a Sims speculum in position and a good light, coughing and straining should produce the symptom. At this same examination, the presence or absence of clinical prolapse may be confirmed. In the group of patients without prolapse, several additional investigations should be employed. Excessive urethral mobility is a feature, and may be demonstrated by the insertion of a uterine sound or a small Hegar's dilator into the urethra enabling it to be moved freely on its attachments, in sharp contradistinction to the normal female urethra. Depressing the urethra towards the vagina invariably produces a small trickle of urine.

Special Investigations.

Examination of the Urine.

For patients with additional urinary symptoms, a microscopic examination of the urine is essential, and any infection must be eliminated before a final assessment. Measurement of urinary volumes is useful when polyuria is suspected.

Cystoscopy.

Cystoscopy is the most important pre-operative investigation. The bladder capacity in the patient with true mechanical stress incontinence is always within normal limits. If any difficulty is experienced in distending the bladder of the unanæsthetized patient over 12 to 15 oz., then the capacity of that bladder is suspect, and any endeavour to cure the incontinence with a mechanical procedure is unlikely to be successful. The bladder wall, trigone and ureteric orifices must all be seen clearly and pronounced normal. Hunner's ulceration or chronic interstitial cystitis is a common lesion in middle-aged females in Melbourne, and the detection of this lesion absolutely excludes any of these patients.

Radiography.

After a prolonged trial, the use of cystograms and micturating cysto-urethrograms has now been discontinued as a pre-operative investigation. Many important papers on this subject in world literature have each been able to show that something different exists in their particular group of patients. After a large series in which the varied radiological patterns were often in conflict with accepted teaching and clinical signs, this investigation is now considered confusing and frequently unhelpful, and is no longer employed. It has been found by experience that the majority of these patients can be selected or rejected on the history, the examination of the urine and cystoscopy, without the need for radiological investigation of the bladder and urethra.

Conclusions.

1. Pure mechanical stress incontinence is a lesion frequently curable by surgical intervention.

2. Its presence is favoured by the patient's being parous and volunteering a mechanical history of persistence, lack of remissions and initiation of the symptom under gravitational conditions.

3. Its presence prior to, or its persistence after, a vaginal repair is strong evidence of a pure mechanical lesion.

4. Surgical intervention is most unlikely to be successful in the presence of neurological symptoms, other urinary symptoms or abnormal cystoscopic findings.

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Medical Practice.

THE SUPPLY OF DOCTORS IN QUEENSLAND.

IT is now 20 years since the first graduates in medicine from the University of Queensland received their diplomas. The intervening period has seen marked changes and rapid development in the composition of the medical practitioner force in this State.

The first meeting of the Faculty of Medicine was held on April 15, 1936. On August 11, 1939, the University of Queensland Medical School was opened — more than half a century having elapsed since the last Australian school had been opened, in Adelaide.

In 1940 the first 21 graduates received their diplomas, and during the next two decades the numbers rose between two and three times. From 1940 to 1959 there were 987 graduates, including 103 women. The most productive period was between 1950 and 1954, as a result of the increased post-war intake, as Table I shows.

There has been no significant increase in the proportion of women among the graduates.

Where They Come From.

Prior to the opening of the Medical School in Brisbane, students from Queensland completed their studies at the southern centres, and, of course, the supply of doctors for the State depended entirely on graduates from other States and from overseas. The change that has taken place since 1940 is illustrated by a breakdown of the registers of practitioners according to the places of graduation of those registered. (In all analyses based on the registers, first-year resident medical officers have been excluded from the registers for the years prior to 1956, when they were entitled to full registration. This has been done in order to secure continuity with the present system, under which they are granted provisional registration only and do not appear on the main register. Unfortunately it was not possible to eliminate those graduates from other States who do their internship in Queensland. At present they number about a dozen.)

TABLE I.
Number of Medical Graduates from the University of Queensland.

Years.	Number of Graduates.		
	Male.	Female.	Total.
1940 to 1944 ..	138	17	155
1945 to 1949 ..	157	19	176
1950 to 1954 ..	317	32	349
1955 to 1959 ..	272	35	307
Total ..	884	103	987

TABLE II.
Registered Practitioners According to Place of Graduation.

Place of Graduation.	1939.	1950.	1960.
Queensland	0 (0·0%)	232 (24·8%)	776 (49·8%)
Sydney	362 (52·0%)	397 (42·5%)	402 (25·8%)
Melbourne	162 (23·3%)	155 (16·6%)	156 (10·0%)
Adelaide	13 (1·9%)	20 (2·1%)	21 (1·3%)
British Isles	137 (19·7%)	96 (10·3%)	167 (10·7%)
Other British Commonwealth[1]	14 (2·0%)	8 (0·9%)	12 (0·8%)
Europe and America ..	7 (1·0%)	24 (2·6%)	21 (1·3%)
Others	1 (0·1%)	2 (0·2%)	4 (0·3%)
Total	696 (100·0%)	934 (100·0%)	1559 (100·0%)

[1] Almost entirely from New Zealand.

TABLE III.
Changes in the Age Distribution of Doctors Registered in Queensland.

Age (Years).	1939.	1960.
25 to 34 ..	157 (22·6%)	632 (39·9%)
35 to 44 ..	259 (37·2%)	461 (29·6%)
45 to 54 ..	148 (21·2%)	179 (11·5%)
55 to 64 ..	82 (11·8%)	195 (12·5%)
65 to 74 ..	32 (4·6%)	81 (5·2%)
75 and over ..	18 (2·6%)	21 (1·3%)
Total	696 (100·0%)	1559 (100·0%)
Lower quartile ..	35·8 years	32·1 years
Median	42·6 years	38·3 years
Upper quartile ..	52·3 years	48·6 years

Table II shows the composition of the doctor force according to place of graduation for the years 1939, 1950 and 1960. The proportion of Queensland doctors holding degrees from other Australian universities dropped from 77% in 1939 to 37% in 1960. The proportion of overseas graduates dropped from 23% in 1939 to 14% in 1950, but has remained more or less stable since then.

Of the 934 Queensland graduates for the years 1940 to 1958, 776, or 83%, were on the register in August, 1960.

TABLE IV.
Population per Doctor, 1939–1960.
(All Registered Doctors, Excluding Interns from the University of Queensland.)

Year.	Population. (Thousands.)	Number of Doctors. Total.	Number of Doctors. Resident in State.	Population per Doctor. All Doctors.	Population per Doctor. Doctors in State.
1939	1015	696	664	1458	1529
1947	1105	870	747	1270	1480
1950	1194	933	862	1279	1385
1954	1315	1195	1108	1100	1187
1955	1342	1214	1114	1105	1205
1956	1368	1258	1151	1087	1189
1957	1394	1328	1233	1050	1131
1958	1415	1412	1305	1002	1084
1959	1438	1477	1359	974	1058
1960	1463	1559	1436	938	1019

TABLE V.
Population per Doctor in the Australian States (1959).

State.	Population, June 30, 1959.	Number of B.M.A. Members.	Estimated Number of Doctors.	Population per Doctor.
New South Wales	3,756,375	4127	4585	819
Victoria	2,814,523	2947	3274	860
Queensland	1,440,998	1329	1477	974
South Australia ..	920,835	924	1027	896
Western Australia	719,164	705	783	918
Tasmania	342,215	260	289	1184
Australia	9,794,110	10,292	11,435	856

TABLE VI.
Population per Doctor in Various Countries.

Country.	Year.	Population per Doctor.
South Africa	1957	1800
Yugoslavia	1956	1700
Poland	1957	1300
Sweden	1957	1200
Canada	1957	950
Japan	1957	950
France	1958	930
United Kingdom ..	1958	880
Denmark	1957	830
U.S.A.	1958	790
West Germany	1958	730
New Zealand	1959	700
Switzerland	1958	700
Italy	1956	690
Czechoslovakia	1958	610
U.S.S.R.	1958	580
Israel	1958	420

Average Age has Dropped.

Quite substantial changes have taken place in the age distribution as well. Table III shows the age distribution for the years 1939 and 1960, calculated on the assumption

TABLE VII.

Geographical Distribution of Queensland Doctors.

Statistical Division.	Number of Doctors (1959).	Population per Square Mile (1954 Census).	Number of Doctors per 10,000 People.			Percentage Increase in Number of Doctors per 10,000 People.	
			1947.	1954.	1959.	1947–1954.	1954–1959.
Brisbane	812	1305	10·1	12·5	14·3	24	14
Moreton	137	22·0	3·8	5·4	7·1	42	31
Maryborough	74	7·1	5·1	6·0	5·8	18	−3
Mackay	26	5·9	4·0	6·0	5·7	50	−5
Downs	100	4·8	6·1	6·6	7·1	8	8
Cairns	55	3·2	4·3	6·3	5·6	47	−11
Rockhampton	47	2·3	4·3	5·7	5·1	33	−11
Townsville	57	1·9	5·2	7·7	7·0	48	−9
Others[1]	51	0·2	5·7	4·5	5·5	−21	22
Total in Queensland	1359	1·96	6·75	8·42	9·45	25	12
Number outside Queensland	118						
Total on register	1477						

[1] Roma, South-West, Central West, Far West, North-West and Peninsula.

that the age at graduation was 25 years. The "lower quartile" is the age below which 25% of the doctors' ages lie. The ages of 50% lie below the "median" and those of 75% below the "upper quartile".

Population-Doctor Ratio.

The supply of medical practitioners in relation to the size of the population is measured either by the average number of persons per doctor or by the number of doctors per 1000 or per 10,000 of the population. The more generally used measure is the first, although the second method has particular uses (see, for example, Table VII).

TABLE VIII.

Employing Authority or Type of Practice.	Number of Full-time Medical Officers.
Hospitals (excluding first-year residents)	218
Commonwealth Health Department	10
State Health Department	47
Repatriation Department	36
Royal Flying Doctor Service	4
University of Queensland	31
Queensland Institute for Medical Research	5
Total receiving salaries	351
In private practice in Queensland	1100
Not in Queensland	123
Total on register	1574

Table IV shows the trends in the population-doctor ratio from 1939 to 1960, (i) based on all doctors on the register, and (ii) based on those doctors registered as living in Queensland. The second figure is deemed more appropriate in measuring the extent to which the number of doctors is approaching any particular level, but the first is required for comparisons with other Australian States and other countries.

Comparisons with other Australian States pose some difficulties. Regulations concerning "purging" of the register vary in their stringency from State to State, with the result that in some States the registers are less reliable as indicators of the actual numerical strength of the profession than in other States.

British Medical Association headquarters have expressed the view that about 90% of those eligible for membership are members of the Association. An actual check of the Queensland register for 1960 against the B.M.A. Branch membership lists showed that almost exactly 90% of all registered practitioners were indeed members of the B.M.A. This includes doctors living outside Queensland.

On the assumption that this was a feature common to all States, it was possible to construct comparative figures by adding one-ninth to the B.M.A. branch membership totals for 1959 and estimating the population-doctor ratio from the result so obtained. The outcome of this was to indicate (see Table VI) that, except for Tasmania, Queensland was still lagging behind the other States in 1959.

TABLE IX.

Number of Doctors Registered for Various Specialties in 1960.

Specialty.	Number Registered.	Specialty.	Number Registered.
Surgery	109	Orthopædics	23
Obstetrics and gynæcology	85	Psychiatry	23
Medicine	76	Anæsthetics	22
Ophthalmology	39	Oto-rhino-laryngology	22
Pædiatrics	33	Pathology	19
Radiology and/or radiotherapy	33	Others	50
		Total	534

The "Annual Report on Epidemiological and Vital Statistics" published by the World Health Organization (Geneva, 1960) gives estimates of the number of people per doctor in various countries. With reserve where reserve is due, the picture is as shown in Table VI. The selection of countries is for illustrative purposes only.

Geographical Variations.

The figures for the population-doctor ratio show considerable variation among the various geographical divisions (statistical divisions) of Queensland.

During the period 1947 to 1954, the number of doctors per 10,000 people increased by 25%, and most of the statistical divisions shared more or less equally in the expansion (the notable exceptions being the areas of low population density which actually showed a 21% decline). From 1954 to 1959 the increase was somewhat slower over the whole State, and during this period no fewer than five of the statistical divisions showed a decrease in the number of doctors per 10,000 people, while the lowest density areas regained their 1947 position. The position for three selected years, 1947, 1954 and 1959, is shown in Table VII.

What They Do.

About 350 of the registered practitioners living in Queensland are salaried officers, more than 60% of whom work in hospitals. Details obtained during September, 1960, were as shown in Table VIII.

The total of 1574 includes 15 doctors who registered after the main register had closed. In addition to these, there were 67 doctors holding limited registration,

including 53 recent graduates of the University of Queensland and 12 from other universities.

Without an actual census of doctors, it is not possible to say just how many are inactive. New Zealand experience in 1959 was that 85% of registered doctors were active within New Zealand. The correspondence between the official register and the B.M.A. membership in Queensland is very good. It was found for 1960 that 92% of the registered doctors living in Queensland were members of the Queensland branch, while many of the others belonged to other branches of the B.M.A.

TABLE X.

Year.	Expected Number of Graduates.
1960	61
1961	72
1962	98
1963	111
1964	110
1965	133

Similar difficulties apply in estimating the number of private general practitioners. In 1960 there were 431 registered specialists, each with one or more specialties. Of the 431 specialists, 420 were living in Queensland. Addresses on the register are a very uncertain guide, but it would appear that at least 47 of the specialists were full-time salaried officers; this left 384 (or less) in private practice. Many of the latter would indulge to a greater or lesser extent in general practice as well, but it seems safe to conclude that of the 1100 doctors in private practice in Queensland, between 700 and 800 are general practitioners.

Table IX shows the number of doctors registered as specialists in each of the main categories of specialization (the total registrations number 534 specialties distributed among 431 specialists).

What of the Future?

In forecasting the number of doctors in the State during the forthcoming period, it is necessary to take into account such factors as immigration, deaths and retirements.

TABLE XI.

Forecast of Numbers of Registered Doctors, 1961–1968.

Year.	Estimated Population. (Thousands.)	Estimated Number of Registered Doctors.		Population-Doctor Ratio.	
		Living in Queensland.	Total on Register.	Living in Queensland.	Total on Register.
1960	1463	1436	1559	1019	938
1961	1493	1485	1614	1005	925
1962	1511	1550	1685	975	897
1963	1533	1623	1764	945	869
1964	1556	1717	1866	906	834
1965	1579	1821	1979	867	798
1966	1602	1923	2090	833	767
1967	1628	2043	2221	796	733
1968	1654	2166	2357	764	703

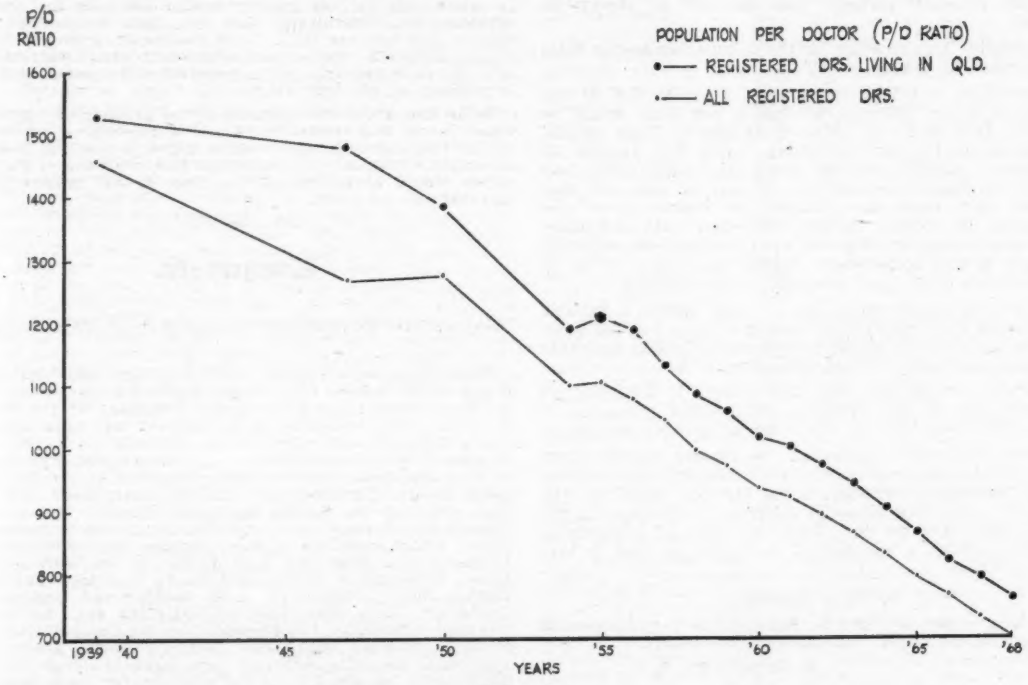

FIGURE I.

During the period 1957 to 1960, the net balance of immigrant doctors over those leaving the State or retiring (and not re-registering) was 111, an average of 37 a year. (It is not possible to say with any accuracy how many registered doctors are in retirement.)

When the Australian age-specific death rates are used and applied to the present age-distribution of doctors, it appears that losses through death will amount to almost exactly 1% *per annum*.

The sources of supply of doctors are (i) new graduates from the University of Queensland, (ii) immigrants from other States or from overseas. The losses come from (i) emigration, (ii) retirement, (iii) death.

On the basis of the present enrolment of the University of Queensland Medical School, and on the assumption that the pass rate in each year of the course will remain as at present, it is expected that the numbers who will graduate will be as set out in Table X.

On the basis of the expected enrolment for 1961, there should be a further 140 graduates in 1966.

In forecasting the number of registered doctors expected to be living in Queensland in 1961, the following procedure was followed. The number of registered doctors living in Queensland in 1960 was increased by 30 to allow for the balance of immigration over emigration and retirement from the register. Recent experience has been that for every 100 graduating from the University of Queensland, 82 will seek full registration two years later and will be living in the State. This means that 82% of the 1959 graduates may be expected to register in 1961. From the total so obtained, allowance was made for deaths at the rate of 1% of the doctors on the 1960 register who were living in Queensland. The net result was the forecast for 1961. The estimated population was based on official projections, allowance being made for an annual net immigration of 1000 persons. The procedure was kept constant over the forecast period. The forecast is shown in Table XI.

The steady improvement in the population-doctor ratio is illustrated in the graph (Figure I).

To maintain a minimum of one doctor to 700 of the population, about 100 new graduates per year would be required. This figure is obtained as follows. The annual net population increase of about 26,000 will require 37 new doctors. Losses through death and retirement (say 2%) would require another 43. It may be assumed that the net gain from the balance of immigration over emigration of doctors is nil. To secure the residence within Queensland of 80 newly graduated doctors will (on the basis of past experience) require an output of 98 to 100 graduates from the University of Queensland.

The present enrolment of the Medical School is capable of producing graduates at the rate of at least 130 per year, which is 30 in excess of the numbers required to maintain a population-doctor ratio of 700 after 1968.

It is clear, therefore, that the School is fulfilling its responsibilities in the provision of medical personnel to meet medical services on the scale at present envisaged.

Further immediate gains can be made, not by overcrowding our already crowded class-rooms and laboratories, but by qualitative improvements in the work of the School, by expanding material facilities, by increasing the teaching staff and by improving the work of students to the point where a substantial reduction in the failure rate is achieved.

Acknowledgement.

Thanks are due to Miss R. Kelly for her assistance in tabulating much of the material of this report.

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Out of the Past.

CURES FOR CANCER.[1]

[From the *Australasian Medical Gazette*, March, 1902.]

WE are at present suffering from a severe epidemic of cancer cures. The case of Lady Marsham to which regrettable notoriety was recently given by the London Press was professedly published to extol the virtues of violet leaves as an infallible remedy. From America speedily comes the news that the value of violet leaf fomentations is as nothing compared with the efficacy of an old friend which has periodically been credited with marvellous powers in a long succession of diseases, namely, sulphur. Various forms of electricity are being exploited vigorously, and whereas one set of believers pin unyielding faith to the Röntgen rays, another as confidently asserts that high-frequency currents are about to supersede every previous method of treatment and are to prove the permanent panacea for the control of all forms of malignant disease. The publicity given to these and many other so-called cures in the general Press is most undesirable from every point of view.

As regards causation, the trend of professional opinion has lately been in the direction of supporting the theory which connects the admitted increase of cancer with a more luxurious way of living and particularly with the progressive dietetic preference of the western world for nitrogenous food which systems of cold storage and preservation by canning have within recent times brought so largely within the reach of all classes. As a deduction from this theory, Dr. James Braithwaite has just published in *The Lancet* a paper advocating reasons for believing that probably excess of salt is the ultimate factor in the meat-eater's diet which is responsible for his greater susceptibility to the dreaded disease. Dr. Braithwaite does not claim to produce conclusive proof of his theory, but the well-known prevalence of the disease in Switzerland where salt enters very largely into the daily regimen of the population is a suggestive fact in support of his contention.

In all probability the solution of the problem of curability, when found, will resolve itself into a question of prevention rather than cure. It is difficult to conceive how any methods other than surgical can cause the disappearance of such an active tissue growth as cancer once it has become fairly established.

[1] From the original in the Mitchell Library, Sydney.

Congresses.

THE THIRD EUROPEAN CONGRESS OF CARDIOLOGY.

THE European Society of Cardiology held its third Congress in Rome, Italy, from September 18 to 14, 1960, under the high patronage of the President of the Italian Republic. The Congress was attended by approximately 800 physicians and their wives and was an outstanding success. This was chiefly owing to the splendid organization of Professor Luigi Condorelli, the President of the Congress, aided by Dr. Vittorio Puddu, the Secretary-General of the Congress, and the Secretary, Dr. A. Strano. The opening ceremony took place in the Aula Magna of the University of Rome, where members of the Congress were addressed by Professor Ugo Papi, the High Rector of the University of Rome, Professor G. Nylin, and Dr. P. D. White, Dr. D. E. Bedford, Dr. I. Chaves, Dr. J. K. Maddox and Professor L. Condorelli. This was followed later in the day by a reception offered by the President in the Campidoglio. The scientific sessions began next morning in the Palazzo dei Congressi, one of a series of new large buildings recently constructed by the Italian Government for such meetings or for trade fairs. The building contains a very large auditorium with facilities for simultaneous translation, and six or seven smaller auditoria with similar facilities, as well as a permanent bank, post-office, restaurants, travel bureaux, bar, etc. Plenary sessions were held in the large hall each morning, and dealt with the following subjects: cardiomyopathy, cardio-pulmonary physiopathology, vectorcardiography, extracorporeal circulation, endocarditis, and arteritis. These were followed by orations, which were given by Dr. Evan Bedford of London, Professor J. Lenègre of Paris and Professor L. Condorelli of Rome, respectively, on the subjects of "New Ways for Old in Cardiology", "Actualities and Perspectives in Cardiology" and "Clinical Studies on Peripheral Vascular Sensitivity". In the afternoon individual communications were presented, of which there were some 300, as well as a daily presentation of scientific films. There were four official languages—English, French, German and Italian.

An interesting scientific exhibition was on display with contributions chiefly from Germany and Italy, as well as a trade exhibition of instruments for laboratory diagnosis and displays by various drug firms.

Emphasis in this Congress was placed less upon congenital heart disease, which has featured prominently in the past, than upon intimate pathology of the vessels and of the heart, myocardial chemistry, deep hypothermia, investigation of the peripheral circulation, and the use of radioisotopes and dyes in cardiac and lipoid metabolism. Attendance at some of the sessions was affected by the many distractions of Rome and the excellent arrangements made for sightseeing by the Ladies' Committee, and also by the fact that the organizers of the Congress had already prepared in three volumes the entire proceedings printed in four languages. These were presented to each registrant, so that no notes need be taken, and if it proved difficult to attend any meeting, the text of the speakers' remarks was already in everyone's hands.

While no sensational scientific developments were announced, the whole standard of the scientific work presented and the technical illustrations used were of a high level, and all those privileged to attend agreed that the Congress was a remarkably well organized and thoroughly valuable experience.

Summaries of a few of the contributions of more general interest will now follow.[1]

In the disussion on cardiomyopathies, it was pointed out that the hæmodynamics were the same whether the constriction was in the muscular wall, in the pericardium or in the endocardium, and three types of cardiomyopathy were described—namely: obstructive, from massive septal hypertrophy; constrictive; and a type with congestive cardiac failure with mitral or tricuspid incompetence. In the obstructive type, which usually resembles aortic stenosis clinically and electrocardiographically, the ejection murmur is heard best at the left sternal edge, and the pulse is normal or jerky rather than slow and rising. No calcium is visible in the region of the aortic valve in persons aged over 40 years. These are some of the guides which were suggested to avoid an erroneous diagnosis of aortic stenosis at valvular level. In a paper on supraaortic stenosis, it was pointed out that this closely resembles coarctation of the ascending aorta, and is associated with very high left ventricular pressures and great work hypertrophy of the left ventricle. It can be suspected clinically in a case which seems to be one of aortic stenosis, but in which the ascending aorta is not dilated, and angiography of the left ventricle shows an obstruction above the level of the aortic valve with considerable enlargement of the coronary vessels. Three levels of pressure are observed from left-heart catheterization—namely, (i) in the left ventricle and (ii) in the chamber between the aortic valves and the obstruction, where there may be a negative systolic phase due to the Venturi effect, and (iii) a sudden fall of pressure beyond the obstruction. The results of operation are said to be satisfactory. In a description of the hæmodynamics of coronary capillaries, the speaker said that the internal pressure of the heart wall was 10 mm. of mercury. The speaker was doubtful whether the capillaries were actually obliterated during cardiac systole, as compression effects were modified by the spiral and interlacing nature of the ventricular muscle. The intracardiac pressure operating against the constriction from muscular contraction also tended to leave the capillary unobstructed. The coronary artery pressure was transmitted to the capillary and was opposed by osmotic pressure, a gradient of some 90 mm. of mercury being left between the capillary and the extracapillary bed. It was thought that the high flow in the coronary venous system accounted for the rarity of thrombosis in the coronary veins. It was also stated that sympathomimetic amines were fixed in the myocardium and might affect local vascular conditions. They would be independent of lesions of the large vessels, so that anatomical lesions were not necessarily representative of the true state of the ultimate coronary circulation. Reference was also made to the discovery of cushions which filled the role of buffering devices at arterio-venous junctions. They were said to be shown much better in living tissue. The determining factor was more one of arteriolar spasm rather than of obstruction of a large vessel, and too much attention had been given up till now to the latter factor in myocardial necrosis. The speaker described cases of cardiac infarction involving the full thickness of the ventricular wall with hæmorrhage, occurring in the absence of any coronary thrombosis even in relation to coronary vessels of large size with a patent lumen.

Another contributor had carefully examined the coronary arterial system in over 100 autopsies, with a view to discovering in how many instances surgery by means of endarterectomy or grafting would benefit the coronary circulation. The autopsies showed an average of 2·5 infarcts per patient; 50% had proximal blocks of the coronary arterial system. The critical internal diameter below which infarction occurred was held to be 3 mm. Only 16% of coronary artery obstructions were surgically accessible in that series, and results with grafting of such small vessels elsewhere in the body had been most disappointing. Further, the risks of coronary arteriography should not be forgotten. Syphilitic aortitis with angina pectoris resulting from coronary ostial obstruction at present represented the only absolute indication for surgical attack.

A group from St. Bartholomew's Hospital described 11 cases in which bilateral resection of the sympathetic chain from the first to the fourth thoracic segment had been performed for persistent anginal pain. Pain subsequently returned in six, but in five of them only after a further myocardial infarction. In all the patients relieved, the exercise required to produce electrocardiographic changes was much greater. This would appear to mean that the operation had improved coronary flow as well as interrupting the pain path.

Another speaker referred to the occurrence of cardiac pain in mitral stenosis, which had occurred in 20% of 194 patients with a tight mitral stenosis. The coexistence of coronary disease of a high fixed pulmonary resistance, poor coronary flow and post-embolic coronary occlusion was stated to be the triad of reasons for the appearance of angina. In the relief of cardiac pain contradictory opinions were expressed as to the value of "Tersavid", a monoamine oxidase inhibitor closely related to iproniazid. It was held that the side effects of giddiness and insomnia were too common to make the drug generally useful. In the long-term prognosis after myocardial infarction, nearly 2000 hospital patients were studied; one-third were dead in the first four weeks; one-third of the deaths occurred in the first 24 hours (representing 81% of those surviving the acute phase).

A series of 250 patients with atrial septal defects operated upon in a London hospital under superficial hypothermia represented 93% of patients with secundum defects and 7% with primum defects. The defect occurred 181 times in the region of the foramen ovale, 60 times in the region of the inferior vena cava and 17 times at the opening of the superior vena cava, in association with anomalous venous drainage. The mortality rate for secundum defects was 3·5%. There were 63 bad-risk cases with a mortality rate of 12·7%. Unfavourable factors were gross cardiac enlargement, congestive heart failure, auricular fibrillation, and an age over 40 years. Fifteen cases were of the Lutembacher variety, and it was pointed out how important it was in such cases to relieve the mitral stenosis. Twenty-one patients had pulmonary hypertension. After operation, four patients showed persistent auricular flutter, three persistent auricular fibrillation and 1·5% permanent heart block. In an eight-year follow-up investigation, it had been found that only those with arrhythmia had not done well. There were three deaths among the 18 cases of primum septal defect. Those required the use of the by-pass machine and closure by means of a "Teflon" patch. Heart block was common in these cases, as also were difficulties with the repair of the heart valves. It was recommended that a patch should be placed on the valve, as well as the suturing of the two halves together. A number of authors referred to the use of a plastic curtain or groove to deflect the blood from anomalous pulmonary veins into the right auricle. Most speakers who had attempted a full corrective operation for the tetralogy of Fallot reported a considerable mortality rate, varying from 16% to 40%, and a number of technical difficulties, chiefly heart block. It was thought that radical remodelling of the outflow tract of the right ventricle was necessary. In another series of uncomplicated ventricular septal defects, only three of 85 patients operated upon had failed to survive. All these had high right ventricular pressures and developed heart block. Very little information was available on the follow-up investigation of patients with tetralogy of Fallot who had had the full corrective operation. A new operation for the correction of transposition of the great vessels was described, but was too new to be evaluated. The general conclusion was that in this very risky field, the creation of a temporary atrial septal defect might tide the child over the first five years, after which one of the more complicated recircuiting opera-

[1] A complete summary of the many pieces of careful work presented at the Congress would require a special number of this journal. No doubt many of the contributions will be abridged in the Continental journals devoted to cardio-vascular disease. The whole proceedings in detail are now obtainable from the publishers, *Excerpta Medica*, of Amsterdam.

tions could be attempted. The difficult and contradictory results of operations for aortic stenosis were freely discussed, and the high mortality if aortic incompetence was present before or after operation was referred to by several speakers. Little encouragement was given on pathological or on technical grounds for rapid development in grafting of coronary arteries, and it was pointed out that endarterectomy might actually block a branch arising in the path of the segment operated upon. In one successful case in Sweden, the patient survived a longitudinal excision of a main coronary artery into which an autograft was then sutured. No permanently good results were yet available from operations for mitral incompetence, and a high mortality rate, up to 50%, was mentioned by some surgeons. Selective left ventricular angiography was mentioned as useful in determining the degrees of mitral incompetence, and also to exclude the presence of aortic incompetence, which was a serious accompaniment. Only certain anatomical types can be repaired, and these are not distinguishable clinically. A French surgeon had removed three myxomas from the atria, diagnosed before operation by selective angiography, and in one case by the histological examination of an embolism.

An interesting session was that devoted to deep hypothermia, in which cold blood was pumped into the patient to reduce the cardiac temperature to 16° C. and so produce cardiac arrest, with the opportunity of some 45 minutes' operation time on the quiet heart. Fibrillation occurred regularly during the warming process, but could be handled satisfactorily, and occasionally a second period of deep hypothermia was then induced. In Sweden late Parkinsonism had sometimes followed this technique, but was not mentioned by other speakers. It was held that this procedure was very interesting from the point of view of other types of surgery than cardiac surgery. Experiments with dogs and monkeys have shown that at 16° to 18° C., which is the level at which the organism becomes a true poikilotherm, intermittent injections of small quantities of blood into the heart and brain are sufficient to allow a safe circulatory arrest, corresponding to a surgical procedure on an exsanguinated heart for a period of 45 to 60 minutes. An irrigation with fluid containing physiological amounts of adrenaline favours defibrillation. However, not all speakers were convinced that it was necessary to use this new and rather dramatic technique; some held that the same result could be achieved by a good transfusion at normal temperatures or with superficial hypothermia. In the estimation of blood loss at the end of cardiac bypass, use can be made of the fact that the sudden injection of 100 ml. of blood into a constricted arterial bed will raise the blood pressure until the hypovolæmia is corrected.

Discussing the problem of operability in left-to-right intracardiac shunts with pulmonary hypertension, two French surgeons reported unfavourable results when pulmonary resistance exceeded 600 dynes. In others who escaped immediate disaster, the pulmonary artery pressure did not fall significantly. In mitral valve surgery, all agreed that the transventricular dilator was a great advance and would reduce the incidence of restenosis. Many Continental surgeons appear to approach this operation from the right side of the chest, holding that the all-important aortic valve cusp is better protected, and that they are able to work deeper in the ventricle. Cine-angiography is being developed further in many centres and is of considerable use in determining shunts and in pin-pointing the site of obstructions. In particular the patterns in systole and diastole of the ventricular chambers are well shown, and this is of great assistance in understanding the nature of subvalvular stenosis.

Insistence on a peripheral mechanism of reflex vasoconstriction in the arteries supplying striped muscle was demonstrated as the results of experiments in which potassium cyanide and even defibrinated blood were injected suddenly into these vessels. These results did not appear in the denervated limb, and it was held that there might be chemical baroceptors in those arteries, and that those reflexes might play a part in the postural adjustment of blood flow. Another speaker referred to 39 cases of auricular flutter and tachycardia in infancy, which had been followed up. These occurred mainly in infarcts in babies aged under under one month. There were five deaths, but in the remainder the arrhythmia had disappeared by the age of five years. In discussions about the relief of persistent cardiac pain, the value of bilateral sympathectomy, by which the upper five sympathetic roots were divided, was favourably commented upon. The mono-oxidase inhibitors such as "Tersavid" and "Marplan" was discussed, and opinions differed as to their value. "Tersavid" appeared to have fewer side affects than "Marplan". A systolic descent of the jugular venous pulse was held to be of assistance in distinguishing constrictive pericarditis with an absent third heart sound from cardiomyopathy, and to be an indication of cardiac tamponade. In the surgical treatment of auricular septal defects, ventricular septal defects, patent ductus arteriosus and aorto-pulmonary fistulæ with high pulmonary arterial pressure, surgery is indicated under the following circumstances: either when the pulmonary resistance is less than 600 dynes or the systemic resistance:pulmonary resistance ratio has a value approximating 4, or when the ganglion-blocking oxygen test reveals an increase of this ratio to a value of 4 or greater. A report was given of trials with "Darenthin" in the treatment of established pulmonary hypertension, but with negative results. Other authors held that reserpine selectively lowered the raised pulmonary blood pressure in mitral stenosis by 15 to 20 mm. of mercury before operation, but was without effect after operation.

The use of dye dilution curves for the estimation of valvular incompetence was referred to by one British worker. The presence of incompetence increases the spread, lowers the peak concentration and shortens the appearance time. The ratio of spread of the curve measured at one-tenth of the maximum concentration in seconds divided by the appearance time in seconds has been used as an empirical measure of the incompetence. In normal subjects this ratio varies between 1·4 and 2·8. In valvular incompetence, it may rise as high as 15·0, but it is not completely reliable.

In a discussion of cardio-pulmonary relationships in disease, the dyspnœa threshold was described as the point where the work of breathing reached 1·5 to 2 kilogram-metres per minute. Three factors contributed: abnormal hyperventilation, increased elasticity and augmented viscosity. In pulmonary stenosis, the degree of hyperventilation is out of proportion to the oxygen consumption, while in pulmonary œdema, the augmented work of breathing is explained by the increase in elastic resistance. In emphysema, increased cardiac output does not occur until arterial saturation falls below 80%, but is not always observed. Digitalis can further increase a high cardiac output in cor pulmonale. After recovery from right-heart failure, a high output is not seen again. In chronic hypoxæmia, it is not always possible to detect a direct effect of oxygen desaturation on pulmonary arterial tension, and the breathing of oxygen will not always affect this level. Other factors increasing pulmonary artery tension are polycythæmia and œdema of interalveolar walls.

In a discussion concerning the ætiology of congenital heart disease, rubella was held to be responsible for only 2% of congenital defects, and was stated to produce rather more examples of deafness than heart deformities. Ductus arteriosus was said to be present in more than half the cases and ventricular defect in one-tenth. A combination of these two lesions came next. Epidemics of rubella subsequent to that of 1940 appear to have been less potent in producing cardiac defects. No other maternal infections have yet been proved to have an important influence. The higher incidence of cardiac and non-cardiac malformations in the propositus and siblings suggests a genetic influence.

It is obvious that considerable attention is being paid in Europe to cellular pathology in diseases of the heart and vessels, and several speakers contributed valuable information on the histology of the cardiomyopathies and on the cytochemistry and electron microscopy of heart-muscle cells and of the endocardium. In discussions concerning electrocardiography, emphasis was placed upon correlation with hæmodynamic as well as anatomical changes in the heart, and it was pointed out that no electrocardiogram so far described could be considered as specific for any particular form of hypertrophy. Papers dealing with abacterial forms of endocarditis mainly agreed that undiscovered bacteria were probably the ultimate ætiological agent, but that the clinical and pathological picture depended on a variety of reactions by the host tissue. Several German authors described the production of experimental arteritis by injections of various foreign proteins, bacterial and otherwise, and even therapeutic agents. These arteritides closely resembled those of periarteritis nodosa and of other so-called collagen diseases.

Workers from Hungary stated that they could immunize rabbits and hens with beta lipoprotein, and thereby prevent experimental arteriosclerosis, although cholesterol levels remained elevated. They considered that micropolysaccharides from the aortic wall which move electrophoretically form a complex beta lipoprotein, but that this

does not occur after immunization. Œstradiol benzoate seems to protect pulmonary arterioles from serotonin lesions more effectively than thyroxine. Auto-immunization damage to vessel walls was also invoked as a basis for arteriosclerosis with experimental support, in rabbits at least.

By means of tiny thermocouples placed at different sites within the myocardium, observers held that a physiological perfusion at a different temperature from that of the heart muscle reached the epicardium before the endocardium, and the base before the apex of the heart. An examination of intramural branches of coronary arteries failed to reveal any disease modification, except in an infarcted area, in 205 hearts so explored. From Liverpool came a confirmation of the humoral production of myocardial necrosis without vascular damage or injury to any other organ, first described by Selye, following administration of methyl chlorocortisol and sodium dihydrogen phosphate. They suggested intense local production of catecholamine within heart muscle cells as an explanation.

Early electrocardiographic signs of myocardial infarction (first nine hours) were said to be a tall positive *T* wave, a dome-shaped *R-T* interval, and an elevation of the *S-T* segment with *T* wave negativity (subepicardial ischæmia), in this order of appearance. Investigations in Sweden of hæmodynamics in patients three to 11 years after myocardial infarction showed significant differences in spite of apparent clinical recovery. One of the most significant Russian contributions showed that experimental myocardial infarction in rabbits did not follow damage to arteries by cholesterol feeding or by excessive physical strain separately, but only when those two factors were combined.

A plea was made in a contribution from London for the replacement of the clinical term "status anginosus" for that of coronary insufficiency, characterized by an electrocardiogram wherein a square *R-T* depression of from 2 to 6 mm. occurred in leads V_5 to V_7 without reduction in the height of the *R* wave or the appearance of a *Q* wave. The appearances resemble those of the positive response to the exercise test or of digitalis effect, except that the *Q-T* interval is not shortened. Pathologically this pattern is associated with subendocardial ischæmia or infarction, and with extreme narrowing of all coronary branches. The appearances are ominous and are rarely reversed. Some interesting papers described the damaging effects of serotonin infusions in animals, and the observers concluded that failure of serotonin removal by the platelets and by monamino-oxidase might play a part in vascular degeneration in man.

Studies of serum enzyme activity have shown that in severe heart failure cholinesterase and procainesterase decrease, while transaminase, alkaline phosphatase, aldolase and lactic dehydrogenase increase.

Observation of the clearance rate of oxygen-15 and of carbon dioxide from the apices and bases of lungs of patients with mitral stenosis shows that the calibre of blood vessels and local blood flow are greater at the apices than at the bases.

Restenosis of the mitral valve was required in 40 of 500 mitral valvotomies in a Scottish series, all from the first 300 patients to be so treated. The mean time interval between operations was 70 months. Consideration of a second valvotomy should be based on recurrence of previous symptoms, absence of other factors capable of causing deterioration, and an unsatisfactory primary operation.

A French group had practised pre-operative tracheotomy in patients with high pulmonary blood pressure, with encouraging results. Recordings of the carotid pulse through an air-filled cuff around the neck are said to be much superior to direct brachial arterial tracings. The form of the pulse, the upstroke time and the ejection time were the main features examined.

The diagnosis of tricuspid stenosis in the presence of severe mitral stenosis can be assisted by phlebograms obtained during and after exercise. The prominent "a" waves increase further, and the mean jugular venous pressure falls more slowly than normal or than in mitral stenosis alone.

All 14 patients with acute non-specific pericarditis were males. In three no friction was heard, in two the condition was painless, in two abdominal pain only was felt, and there was one death. Multiple attacks occurred in six cases. A review of 37 biopsies from cases of constrictive pericarditis showed that for the patients examined within one year from the onset, up to 92% gave histological evidence of tuberculosis.

In the field of congenital heart disease, it was stated that a true atrial septal defect was rare in the presence of severe pulmonary stenosis. Advice was given to correct the stenosis first and decide one year later after catheterization as to whether an atrial septal defect was present which required closure. In the catheterization of the hearts of children with atrio-ventricular canal defects, three diagnostic criteria were described: (i) low position of the catheter as it traversed the atrial septal defect; (ii) higher arterialization of the right ventricular blood than that of the right auricle; (iii) equal return of blood from both lungs, as shown by dye injection into each pulmonary artery. In pulmonary stenosis, extension of the systolic murmur beyond aortic valve closure, a powerful "a" wave, and *T* wave inversion in the electrocardiogram to lead V_4 and beyond, were held to be indications of the absence of an associated ventricular septal defect.

The coexistence of patent ductus arteriosus and pulmonary stenosis (Heiner-Nadas syndrome) should be suspected if a murmur characteristic of pulmonary stenosis is present together with a high systemic pulse pressure. There is a significant association with maternal disease during pregnancy, and with extracardiac congenital malformations.

Investigation of the effects of noradrenaline in pulmonary blood pressure showed a consistent rise except in patients with pulmonary stenosis. "Darenthin" (bretylium tosylate), unlike pentolinium, failed to produce any fall of blood pressure in this area.

A Turkish cardiologist claims to have found permanent subendocardial damage due to coronary vasoconstriction subsequent to pulmonary embolization, and postulates the final development of systemic emboli due to clotting in the affected endocardium. Simultaneous studies of intrathoracic and right ventricular diastolic pressures in severe emphysema have led some French observers to recognize a rise of the latter at the end of expiration unrelated to cardiac insufficiency. According to a Czech report, increased "wedge" pressure in cardio-pulmonary failure cannot be considered as proof of left ventricular failure, as this reading can be influenced by increased resistance on the venous side of the pulmonary circulation. In a study of 51 patients with diffuse pulmonary fibrosis, no clear relationship could be demonstrated between the arterial oxygen values and the cardiac index.

In a discussion on dye dilution techniques, one speaker stated that if dye was administered into a peripheral vein, it should be after reactive hyperæmia had been produced in that limb, as variations of peripheral venous tone could thus be eliminated. By the use of tagged serum albumin, it has been estimated that the pulmonary blood volume in emphysema and pneumonoconiosis forms 18% instead of 22% of the total blood mass. The injection of dye into each pulmonary artery permits of the differentiation of simple atrial septal defects of the secundum type from primum or atrio-ventricular canal defects, the double peak in the right pulmonary artery injection being most distinct in the secundem situation. Studies of central blood flow using labelled red cells revealed it to be about 15% of cardiac output, and slower in cardio-vascular disease.

The section on radiology produced some interesting papers. Left ventricular catheterization via the brachial artery permitted some quantitation of mitral incompetence and the recognition of subvalvular stenosis, ventricular septal defects and aneurysm of the left ventricle. No accidents occurred in 300 examinations. High-speed angiography is essential. Cinematographic movements of calcified mitral valves show that closure is obtained by valve-ring contraction as well as by leaflet apposition. Correlation of left ventricular angiography with pressure flow findings, simultaneously performed, showed a small gradient in aortic stenosis when combined with mitral incompetence, even though a significant aortic stenosis was confirmed at operation or autopsy. A rough quantitation of mitral incompetence can be made by observing the distance to which the aorta is opacified at the moment of complete left auricular filling with dye. "Persantin" could be seen to cause dilatation and accelerated flow of contrast medium in the coronary tree. Coronary angiography according to the method developed at St. George's Hospital, London where the vessels are filled only in diastole, evoked wide interest.

Identification of the site of origin of significant murmurs could be aided by the use of nor-adrenaline and methoxamine, which intensify diastolic murmurs at the aortic and mitral areas, while serotonin and amyl nitrite increase pulmonary and tricuspid incompetence. Pulmonary valvular murmurs are said to be distinguishable from infundibular murmurs by phenocardiography according to the time of

commencement after the first sound and the nature of the vibratory frequencies.

An electronic method has been devised which eliminates any carotid artery influence upon the jugular phlebogram. A German team recommends a record of the minute ventilation and oxygen consumption before and after the master two-step test as a good guide to the progress of cardiac efficiency for job evaluation after a cardiac operation or infarction.

No rise in pressure during right ventricular catheterization as compared to systemic pressure during infusion of noradrenaline was said to exclude a ventricular septal defect. A London group monitors the carbon dioxide of cerebral arterial and venous blood every three minutes during cardiac by-pass as an index of adequate cerebral blood flow. The nitrous oxide method shunt detection has already found favour in Belgium. It does away with the variable oxygen content of veins, and is high in shunted arterial blood. They favour modifying the method of Sanders, Morrow and Braunwald by the breathing of a 79% concentration of nitrous oxide with the simultaneous taking of blood samples from the right side of the heart and a peripheral artery from the fifth to the fifteenth second.

In the section on electrocardiography, slight inversion of the *T* wave in lead AVL was discounted as significant in the absence of clinical support. In view of the difficulties of interpretation of lead AVF, a new lead "SF" between the manubrium and the left foot was explored, and appears better to reflect pathological changes in the posterior wall of the heart. In the presence of clinical symptoms of pulmonary embolism, *T*-wave inversion in left ventricular leads was the most significant electrocardiographic sign in 29 of 40 patients. Two types of *P* wave were described in diastolic and systolic overloading of the right atrium. Endocavitary electrocardiography is practised commonly in Europe, where it is held to distinguish varieties of atrial septal defects, varieties of pulmonary stenosis, Ebstein's disease and corrected transposition of the great vessels. Examination of the left atrial electrocardiogram after mitral valvotomy showed a return to normal within a week after operation in 20 of 37 patients. Such patients showed the greatest post-operative relief. Failure of the *P* wave to improve often indicates an unsatisfactory operation. The remaining papers in electrocardiography (chiefly Italian) did not disclose any revolutionary concepts, while those in vectorcardiography revealed no agreement upon technique.

According to studies in Sweden, the four-year survival rate of grade IV hypertension was of the order of 50%, for those adequately treated by hypertensive drugs, as compared to 2% in the untreated patients. Attention was drawn to the value of auscultation over stenosed arteries—for example, the carotids and renal and limb vessels—as a diagnostic procedure. Aldosterone excretion in essential hypertension bears no relation to the degree of high blood pressure. It is increased by the administration of hypochlorothiazide. Parenteral administration of bretylium to hypertensive patients produced immediate transient falls in blood pressure, which were enhanced by exercise, probably because of the failure of the drug to release peripheral vasoconstriction.

A ten-year follow-up investigation of patients aged under 60 years who had suffered from myocardial infarction showed that 59% survived more than five years, and 66% had been able to return to their previous employment.

The increased energy requirement of the healthy myocardium during moderate exercise is satisfied by an increase in coronary blood flow rather than by an increased extraction of nutritional substances.

Thromboelastography has obviously established itself in Europe as a reliable method of revealing disturbances in blood coagulability, and in the control of anticoagulant drugs.

According to German observers, the good effects of digitalis in cardiac insufficiency are accounted for by a reduction in blood volume and a normalization of the energy-rich phosphates. Nitroglycerine was stated to exert its beneficial effects by depressant influences on the muscle of the heart and of the peripheral vessels. Hydrazine derivatives, such as iproniazid, may act by raising the blood level of its H.T. or by inactivation of catecholamines. A five-year inquiry into the effects on prognosis of reduction of cholesterol and serum lipids by œstrogens following myocardial infarction and on a control series failed to reveal any benefit. In fact, the incidence of venous thrombosis in general was greater in the treated groups.

Artificially induced hypertension caused a slight vasoconstriction of pulmonary arteries and a fall of cardiac rate and output by stimulation of pressor receptors. Low-sodium diets and saluretics are recommended for sufferers from paroxysmal tachycardia.

Chlorothiazide is said to lower peripheral resistance as well as blood volume. Another interesting communication concerned a series of 39 infants with paroxysmal atrial tachycardia or flutter appearing in the neonatal period. In 68% of these, the arrhythmia had disappeared by the fourth month. Treatment of choice was digitalis, and the prognosis was good in the absence of severe congenital malformations.

"Noisy" pneumothorax (Hamman's sign) can be found in the presence of a shallow left pneumothorax and in the absence of mediastinal air.

The President of the European Society, Dr. E. Bedford, thanked the Italian committee for the splendid work they had done and for their excellent hospitality, and his remarks were supported by Professor J. Lenègre, the in-coming President of the Society. The next European Congress of Cardiology will be held in Prague, Czechoslovakia, in the summer of 1964. The following members of the Asian-Pacific Society attended: Dr. J. Halliday, Dr. M. Alimuring, Dr. K. Datey, Dr. Danraj, Dr. Sheikh, Dr. Lovell, Dr. Fortune and Dr. Maddox.

Correspondence.

HYPERTENSION AND LIFE ASSURANCE: AN APPEAL.

SIR: I had hoped by now that someone of my associates in life assurance medicine would draw attention to the findings of the "Study on Build and Blood Pressure" published in the United States of America in 1959. This statistical study covers a period of 18 years (1935-1953) on 4,000,000 lives assured, and 102,000 deaths. Policies that had been rated up (substandard) for any reason other than build and blood pressure were eliminated from the study; risks rated substandard because of blood pressure were excluded from the build cases and vice versa; all war deaths were excluded; and a "norm" was prepared of the improved mortality in standard issues covering the period of the study. This massive tally of punched cards from 26 companies of the United States of America was submitted to the statisticians and dealt with, as can be expected, with all due expertise.

The findings indicate that assessment has hitherto been too liberal in the case of young to middle-aged men with the commonly accepted borderline blood pressure readings of 140 systolic and 90 diastolic. To quote one example from the study, it was found that in men aged 30 to 39, with blood pressure readings in a range from 138/88 to 147/92, the mortality was 200%.[1] It might be said that a percentage of "coronaries" could have occurred in this group notwithstanding acceptable readings and thus have tipped the scale; but coronary episodes do not favour this age category; and for the benefit of our more statistically minded colleagues, it should be stated that in this group there were 320 policies terminated by death, a sizeable valid experience.

Whilst on clinical grounds the above findings are unacceptable, we are faced with explaining these "indisputable statistical facts", and it is generally believed that they arise through medical examiners being unversed in the mechanics and requirements of actuarial medicine. One finds the higher initial blood-pressure readings—e.g., 160/95—glossed over and discarded in favour of the lower figures, with the result that the incipient hypertensives among the assured risks find their way into the standard files and the statistician is dealing with false data.

Now, Sir, I cannot expect you to grant me space to amplify an appeal I make to enable justice and reason to be dispensed in the assessment of hypertension in life assurance. Nobody should want to risk being silly enough to frighten people. However, whilst we as doctors, often in good clinical faith, continue to fudge and fabricate blood-pressure readings—influenced by a knowledge of the vagaries we know to exist, or because of lack of surety in recording—the anomalies of the study above cited will be perpetuated. Pending such time when an inexpensive and objective method of recording the blood pressure is devised, the task might be better left to technicians.

[1] 100% being standard, 200% implies that in, say, 10,000 lives 200 would die each year instead of 100 at these ages.

With some claim to experience both home and abroad of the contribution of the life assurance field to diagnostic, prognostic and research medicine, it is to be hoped that the heart and post-graduate foundations will explore the educational assistance to be derived through the actuarial and medical avenues of the Life Offices. An elective course might be designed in the medical curriculum for those who, perhaps in later years, might wish to pursue life-assurance medicine as a career and proceed to a certificate of life assurance medicine as obtains in the United States of America. I can commend this career to the profession as one of rewarding academic interest, spiritually satisfying, very testing and challenging, and, contrary to popular belief, one that provides scope for exercise of the humanities.

Yours, etc.,

W. J. McCRISTAL.

The City Mutual Life Assurance Society Ltd.,
Hunter and Bligh Streets,
Sydney.
January 31, 1961.

ACUTE CHLORAMPHENICOL POISONING IN THE NEW-BORN PERIOD.

SIR: We are most grateful to Dr. John Beveridge for the article entitled "Acute Chloramphenicol Poisoning in the New-Born Period", published in THE MEDICAL JOURNAL OF AUSTRALIA, January 21, 1961.

This phenomenon in premature and new-born babies was reported by our Research Department two years ago, and immediate steps were taken to advise the medical profession in Australia and New Zealand. A letter was dispatched to pædiatricians, obstetricians and medical superintendents of leading maternity hospitals, whilst our medical literature was revised appropriately.

Despite the efforts of our many representatives, however, who are, as you are aware, constantly calling on doctors and hospitals, it would seem that some are still not alert to the hazards of therapy in this age group. We trust that the paper by Dr. Beveridge will be successful in emphasizing the importance of correct dosage, not only of chloramphenicol, but of all potent therapeutic agents administered to this vulnerable group.

Yours, etc.,

PARKE, DAVIS & COMPANY,
per
G. H. SHIELDS, Ph.C.,
Manager, Medical Division.

32-40 Cawarra Road North,
Caringbah,
New South Wales.
February 1, 1961.

AN ADVANCE IN POST-GRADUATE MEDICAL EDUCATION.

SIR: Reference is made to your editorial article "An Advance in Post-Graduate Medical Education" (MED. J. AUST., February 4, 1961). All concerned with the concept and organization of the first Australian Conference on Post-Graduate Medical Education are to be congratulated.

For several years the Mater Misericordiæ Hospital, North Sydney, has only accepted resident medical officers who are willing to stay at the hospital for a minimum period of two years, during which they follow a "rotating internship" much along the lines of the basic training period recommended by the Conference.

The course of basic training followed by all resident medical officers covers a period of three months in each of the following services:

First year:

1. Medicine, including pædiatrics, dermatology and allergy.
2. General surgery.
3. Obstetrics, gynæcology and urology.
4. Casualty department.

Second year:

5. Medicine, including dermatology and psychiatry.
6. Surgery, including ophthalmology and oto-rhino-laryngology.
7. Orthopædic and traumatic surgery, including neurosurgery and plastic surgery.
8. Anæsthetics department.

Resident medical officers at the end of two years appear to have received a satisfactory and reasonably balanced basic training. Junior registrars and officers for special duties are selected from among resident medical officers who have completed the basic training period.

There were few, if any, administrative difficulties in introducing the system. It is, of course, obvious that the annual intake of first-year resident medical officers is reduced, in this case, by 50%, though the total number of first-year and second-year resident medical officers employed remains the same.

Yours, etc.,

Mater Misericordiæ Hospital,
North Sydney.
February 6, 1961.

H. M. SAXBY.

HEART FOUNDATION AND REHABILITATION.

SIR: One wonders whether it is practicable to spend 15% of £1,500,000 (minimum sum) on "Rehabilitation of and service to heart patients"[1] by establishing in all capital cities a rehabilitation centre, staffed by a cardiologist, an almoner and a vocational guidance officer, and whether it is wise or proper.

Does the Medical and Scientific Committee know the percentage of heart patients: (*a*) Resuming their normal occupations? (*b*) Prevented from doing so because they are uninsurable? (*c*) Unemployable because of combined medico-social and mental shortcomings? (*d*) Suitable for sheltered work, part-time?

Might not this 15% of the funds of the Heart Foundation be better used: (1) By financing costs of cardiac and allied consultations (including costs of travel), to be requested by the general practitioner? (ii) By helping to finance the inauguration or maintenance of sheltered workshops—especially for the unskilled labourer-heart-sufferer, and for the uninsurable ex-heart patient?

It would be a pity, and wasteful, if hard-earned public funds unduly duplicated what could be better and/or more economically be done by other means, or if non-heart-sufferers were placed at a disadvantage by the discriminatory use of public funds, or if personnel in short supply (e.g., hospital almoners, guidance officers) were used in a superfluous way.

The cardiologists could be attached to existing (? improved) rehabilitation units.

A Select Committee[2] in Britain has already warned against tackling rehabilitation by the "scheduling" of particular diseases.

Yours, etc.,

Sydney. AD VALOREM.

CONSCRIPTION OF MEDICAL OFFICERS.

SIR: The defence of the Secretary of the Hospitals Commission (MED. J. AUST., February 4, 1961) of the committees responsible for allocating resident medical officers is neither necessary nor relevant. "R.M.O." charges the Hospitals Commission itself (MED. J. AUST., January 28, 1961) with attempted "industrial conscription", by virtue of its threat to a recent graduate that if he did not accept appointment at the hospital to which he had been allocated the Commission would not approve his appointment to any other public hospital in New South Wales. The Commission has not offered any defence to its attitude, but instead has made a statement on the methods used by the allocation committees.

Possibly the Hospitals Commission's threat was not within its powers to carry out. It is understood that hospital boards exercise a certain autonomy, and the approval of the Commission is not necessary for the appointment of dish-washers, wardsmen, resident medical officers and others,

[1] National Heart Campaign (pamphlet).

[2] B.M.A. Memorandum (1954), "The Rehabilitation and Resettlement of Disabled Persons".

provided that such appointment is within a scale of personnel previously laid down by the Commission.

It would appear that the Commission not only stands accused of attempted "industrial conscription", but also of attempting to "bluff" a recent graduate into a course of action by the threat of the exercise of powers not, in fact, possessed by the Commission.

Yours, etc.,

Sydney. REASONABLE MAN.
February 4, 1961.

SIR: Judging by the published letter of the Secretary of the N.S.W. Hospitals Commission, he has completely failed to see the sheer ugliness of the letter sent to "R.M.O.", which one accepts as authentic in the absence of a denial from this responsible official.

This letter clearly threatens to prevent "R.M.O." from serving his pre-registration year at any hospital under their jurisdiction unless he does what he is told, and the only justification that one can glean from the Secretary's letter is that it is administratively tidy, and actually the "system came into operation purely in the interests of the medical officers themselves".

This unlovely business smells of "Big Brother".

Yours, etc.,

North Shore Medical Centre, H. J. RICHARDS.
66 Pacific Highway,
St. Leonards,
New South Wales.
February 5, 1961.

SIR: Reference is made to a letter headed "Conscription of Medical Officers" published on January 28, 1961.

The terms and content of the Hospitals Commission's letter are such that they entail definite conscription. This method must surely be foreign to our medical services and cannot be considered in the best interest of either hospitals or medical officers. Whilst one can understand that hospitals need resident medical officers to function efficiently, the method used in this letter cannot be considered a satisfactory solution and can only be condemned.

The situation, as represented, reveals there is an urgent need for review of the training medical officers receive in the hospitals, and in their method of appointment.

At the post-graduate conference held in Sydney last year, all sections were in agreement that new graduates require at least a two-year basic training hospital experience. It was suggested that this period should give practical experience in all the main branches of medicine. If the recommendations of this conference are to be implemented, it will be necessary for representative bodies, such as the post-graduate committees, to interest themselves in this problem to see that recent graduates receive advice as to where they can obtain the best hospital training that will give them wide cover of experience. If all graduates are to receive the opportunity of having two years' training and all hospitals are brought into this training programme, this should overcome the difficulty of the shortage of residents, which has apparently become a problem in certain States.

For a happy and contented medical service, it is hoped that the British Medical Association will take steps to see that this conscription does not occur again, and that the teaching hospitals, the colleges and other interested bodies will speedily review the training which is to be given to resident medical officers.

Yours, etc.,

The Margaret Street Clinic, M. O. KENT HUGHES.
Moonee Ponds,
Victoria.
February 3, 1961.

SIR: I refer to a letter signed "R.M.O.", quoting a letter allegedly written by the Secretary of the Hospitals Commission of New South Wales to a young graduate in medicine and published in the issue of your Journal dated January 28. I refer also to a reply to this letter signed Secretary, Hospitals Commission of New South Wales, and published in the issue of your Journal dated February 4.

From the first letter I quote the fourth paragraph:

> I have to inform you that should you not accept the position at ——— District Hospital, to which you have been allocated, the Commission will not be prepared to approve of your appointment at any other public hospital in New South Wales.

"Of course this amounts to civil conscription", and is a further example of the insidious and ever-increasing momentum of high-handed, bureaucratic control of the medical profession by an outside body no matter how constituted.

In his reply, the Secretary of the Hospitals Commission states that the Commission denies, but he does not refute, the charge made by "R.M.O.". The procedure adopted in the appointment of junior resident medical officers, which he outlined by way of explanation, is well known and apparently necessary under present conditions.

In a free and democratic profession, the young graduate concerned should be given an opportunity to better his appointment if he can by private arrangement or by mutual exchange with a fellow graduate, the exchange to be subject to the approval of the Hospitals Commission; but such approval should not unreasonably be withheld.

Yours, etc.,

Hengrove Hall, J. CAMERON LOXTON.
193 Macquarie Street,
Sydney.
February 7, 1961.

SIR: The letter from the Secretary of the New South Wales Hospitals Commission in your Journal of February 4, 1961, is no real answer to the charge of "industrial conscription" made by "R.M.O.". It ignores entirely the threat made to the recent graduate by the Hospitals Commission to the effect that if he does not accept the position to which he has been allocated "the Commission will not be prepared to approve of your appointment at any other public hospital in New South Wales".

Though there may be many advantages in the system outlined by the Secretary of the Hospitals Commission, even a benevolent and paternal dictatorship can often prove irksome.

Yours, etc.,

81 George Street, CYRIL EVANS.
Brisbane.
February 8, 1961.

AN OPINION.

SIR: In my opinion, any member of the profession, whether consultant or otherwise, who sees and treats a patient at the request of a third party without prior referral to, or consultation with, the patient's own physician, is guilty not only of the grossest discourtesy, but also of the most unethical conduct.

Yours, etc.,

"Victoria House", R. N. LOCKHEAD.
Mittagong.
February 8, 1961.

ARTERIAL GRAFTING FOR OCCLUSIVE ARTERIAL DISEASE OF THE LOWER LIMBS.

SIR: In reference to the article by A. J. Barnett and K. N. Morris (MED. J. AUST., January 7, 1961), in the selection of those patients with arterial insufficiency of the lower limbs, it is noted that lumbar sympathectomy is generally done before any more extensive surgery. There is no question that some cases of intermittent claudication are helped considerably by this lesser procedure. Unfortunately, it is impossible to pick the cases that will benefit.

The operation of choice for the femoral arterial blocks with a patent popliteal artery is the by-pass procedure using synthetic grafts. "Teflon" is probably the best at present. In the first of the four cases I have operated on, I used "Dacron". This graft thrombosed within days of the operation. The next three were "Teflon" and have remained patent.

The claudication distance disappeared (greater than a mile) in two, and a gangrenous spreading ulcer on the sole of the foot healed quickly in the other patient (who

was 76 years of age). In all these cases the dorsalis pedis pulse was restored and has remained so.

The graft which thrombosed illustrated an important point. The arteriogram three months after showed an identical picture to the preoperative one. No harm had been done by the failure of the graft. This is important as, if the operation has been an excision and end-to-end restoration, it is possible that interference with collaterals and thrombosis of the graft (which conceivably may have spread up and down) may result in subsequent amputation, which is the dread in any of these procedures.

I feel that this by-pass procedure with improved synthetic grafts will prove in years to be the commonest operation of vascular surgery.

Yours, etc.,

82 Collins Street, Melbourne.
February 8, 1961.

WILLIAM J. McCANN.

QUADRUPLE ANTIGEN.

SIR: In your issue of February 4, Dr. McKellar Stewart questions the value of quadruple antigen. It was originally proposed that immunization with this new antigen should commence at the third month of life to provide optimum protection against pertussis. Recognizing that residual maternal antibody would in a proportion of infants at that age prevent effectual response to the poliomyelitis component, an extra dose was planned for the sixth month, making, with the reinforcing dose, a total of five injections. When these proposals were discussed by the National Health and Medical Research Council at its 50th Session in October last, the opinion was expressed that the recommended course was too long. To permit release of the antigen early in the year, the Council referred the dosage schedules to a special sub-committee comprising members of its own Epidemiology Committee and representatives of the Australian Pædiatric Association. This committee, having considered recent experience of pertussis in Australia, advised that immunization with quadruple antigen should be commenced in the sixth month and consist of three injections at monthly intervals followed by a reinforcing dose about the fifteenth month.

The profession may be reassured that the dosage schedule for quadruple antigen now recommended has the endorsement of the highest medical authority available in Australia.

Yours, etc.,

National Health and Medical Research Council, Administrative Building, Canberra, A.C.T.
February 9, 1961.

R. E. RICHARDS, Secretary.

A CASE OF MISTAKEN DIAGNOSIS.

SIR: Dr. A. D'Ombrain (MED. J. AUST., 1961, 1: 187) describes pinpoint pupils, which he attributes to prolonged eserine treatment in non-glaucomatous eyes.

I suggest that the correct diagnosis is congenital microcoria (miosis), which is admittedly rare. It is most commonly associated with Marfan's syndrome. As the patient has subluxated lenses, the diagnosis appears to be inescapable.

Yours, etc.,

137 Wickham Terrace, Brisbane.
February 8, 1961.

MARK HARRISON.

UNKNOWN FOREIGN BODIES IN THE LUNG: LENTIL PNEUMONIA.

SIR: In 1946 I described, under the first part of the above title, in this Journal (February 16, page 225) foreign bodies whose nature I did not know. Fortunately they were illustrated by a sepia wash drawing. I asked whether anyone could suggest what they were. No one has done so. But at last I know. Dr. John Emery[1] describes two cases of lentil pneumonia and refers to a paper by Mary A. Head.[2] My bodies are more elongated than those figured in these papers, but the general appearance and size (about 100μ.) are similar. The bodies are considered by these authors to be the cooked cells of lentils. Dr. H. M. Birch tells me that split pea soup is given to the patients at Parkside Mental Hospital.

Yours, etc.,

University of Adelaide, Adelaide.
January 31, 1961.

J. B. CLELAND.

[1] *Proc. roy. Soc. Med.*, 1960, 53: 952.
[2] *J. clin. Path.*, 1956, 9: 295.

AN AUSTRALIAN MEDICAL ASSOCIATION.

SIR: Beauty is in the eye of the beholder, and many (e.g., Kuringai District Local Association) like to behold the beauty of the name "The Medical Association of Australia". The half-humorous fear of at least one "pro-A.M.A." Convention member that "M.A.A." might be pronounced "Maa", is symptomatic of a sick argument and an irrational enthusiasm.

In any referendum, such as Sir Henry Newland postulates, I will put my money on "The Medical Association of Australia".

Yours, etc.,

Sydney.
February 12, 1961.

"ADVANCE AUSTRALIA".

HYPOPYREXIA: AN UNUSUAL CASE.

SIR: about 24 hours after starting treatment for severe bronchopneumonia in an aboriginal youth, it was found that his temperature could not be recorded on a clinical thermometer. However, a lotion thermometer recorded a temperature of 91° F. "Solucortef" therapy was given in addition to the antibiotics he was receiving for his infection, and the patient's temperature gradually rose to 96° F. in about 24 hours. However, when the "Solucortef" therapy was discontinued, the temperature fell sharply to 91° F. again. Once more "Solucortef" therapy was started, and the temperature rose to 96° F. in about 24 hours and gradually returned to normal readings over the following few days.

During the period of hypopyrexia the boy became extremely drowsy; his pulse rate fell from 120 to 80; his temperature fell from 103 to 91° F.; and his blood pressure fell from 120/80 on admission to 80/60.

He made an uneventful recovery apart from absconding from the hospital two days after recovering from the second bout of hypopyrexia. He was easily recaptured.

Yours, etc.,

Wagin, Western Australia.
February 9, 1961.

G. CLAYTON.

EXTENSIVE LEG ULCERS IN RHEUMATOID ARTHRITIS.

SIR: I was pleased to read the reports on three cases of leg ulcers in rheumatoid arthritis as described by Dr. Posen and Dr. Reid (MED. J. AUST., February 4, 1961, page 171).

These ulcers have confronted me on at least three occasions within recent years, and, although not as extensive as the cases described in the article, they have been major problems in management. Usually the physician or general practitioner has tried everything, and having reached the end of his patience and ingenuity, hands the patient across to the reluctant surgeon. There is certainly a close relationship between these ulcers and those seen in cases of ulcerative colitis, and I agree with the authors that some type of hypersensitivity reaction appears to be taking place.

I have found that the mainstay of treatment is modern physiotherapy, the simplest possible dressings (such as zinc ointment), protection of the surrounding skin by painting with gentian violet or similar agent, and a soft comfortable elastic bandage (the American varieties seem best).

Hospitalization is often necessary; but the temptation to skin graft or to perform other local procedures should be resisted, because the tissues have very poor healing capacity. In some cases, it would appear that the medical agents employed in the treatment of the arthritic state, such

as the steroids and "Butazolidin", may play an important role in preventing the healing of these ulcers. Above all, I agree with the need for special care when we meet such ulcers. A guarded prognosis must be given.

Yours, etc.,

201 Wickham Terrace, Brisbane. DANIEL LANE.

February 12, 1961.

Naval, Military and Air Force.

APPOINTMENTS.

THE following appointments, changes, etc., are published in the *Commonwealth of Australia Gazette*, No. 8, of January 26, 1961.

AUSTRALIAN MILITARY FORCES.

Australian Regular Army.

Royal Australian Army Medical Corps (Medical).

2/40188 Captain (Temporary Major) F. N. Dwyer is seconded to the Department of External Affairs, 19th August, 1960.

To be Temporary Major, 3rd November, 1960.—2/40205 Captain W. J. Watson.

Citizen Military Forces.

Northern Command.

Royal Australian Army Medical Corps (Medical).—1/33098 Captain E. F. Reye is appointed from the Reserve of Officers, 30th September, 1960.

The Royal Tasmania Regiment.

Royal Australian Army Medical Corps (Medical).—6/15251 Major J. C. S. Officer is appointed to command 10th Field Ambulance, and to be Temporary Lieutenant-Colonel, 1st July, 1960.

Central Command.

Royal Australian Army Medical Corps (Medical).—To be Captain (provisionally), 19th October, 1960—4/32215 Robert James Sweeney.

Reserve Citizen Military Forces.

Royal Australian Army Medical Corps (Medical).

Eastern Command.—To be Honorary Captain, 25th July, 1960—Howard Fuller Godfrey.

ROYAL AUSTRALIAN AIR FORCE.

Permanent Air Force.

Medical Branch.

The probationary appointment of Flight Lieutenant B. Walters (037263) is confirmed.

Notes and News.

Hospital Finances.

The Commonwealth Minister for Health, Dr. the Honourable D. A. Cameron, has made the following statements relating to hospital finances. Dr. Cameron said that the Commonwealth Government had at all times kept under review its contributions to the hospital system. However, there had to be some limit both to public contributions to hospital benefit funds and to Commonwealth support of fund payments to hospitals, which together had increased in the last 12 years from £6,600,000 to more than £30,000,000. Dr. Cameron said that in his view it was not possible to achieve a correct assessment of the extent of Commonwealth assistance to hospitals solely by noting the fact that what was known as Commonwealth "ordinary" benefit of 8s. a day had not been increased since 1948, and "additional" benefit, which was paid to supplement hospital fund benefits, had not been altered since it was increased to a maximum of 12s. in 1958. That was simply to criticize the method of Commonwealth assistance without paying proper regard to the result, which was surely the thing that mattered. In 1948 only "ordinary" benefit of 8s. was paid by the Commonwealth. The sum total of Commonwealth assistance to hospitals was £5,800,000. Hospital fund payments were a mere £750,000 in addition. In the intervening 12 years, the Commonwealth had fostered the insurance funds by means of the "additional" benefit payments, which were increased from a maximum of 4s. to a maximum of 12s. in 1958. The result was that at the present time the hospitals received £18,500,000 in direct Commonwealth assistance, plus nearly £12,000,000 from the benefit funds. The effect was that today slightly more than £30,000,000 was available to assist the hospitals, instead of only £6,600,000 in 1948. That was almost a fivefold increase.

The point that had to be kept in mind was that all that money was provided by the public, whether by direct taxation or by contribution to the hospital funds. It was not produced from some governmental magician's hat. It should also be remembered that the amount paid to the State Governments by the Commonwealth from consolidated revenue had increased steadily, and in 1960 amounted to £350,000,000. That was additional to finance provided to the States by the Loan Council, and State Governments themselves were free to decide how much of that finance was to be allocated to hospitals.

Dr. Cameron said that the Commonwealth had played over the years a role that had been both constructive and flexible in relation to the hospital problem, and there was no reason to believe it would change in that respect. In point of fact, it constantly examined the position and its own place in the scheme of things. The point he wanted to emphasize was that it must not be taken for granted that the Commonwealth Government would constantly find the answer to the State's hospital problems, without a full exploration by the States of the various other avenues through which current difficulties might be alleviated.

A New Landmark for Canberra.

According to a statement issued by the Minister-in-Charge of the C.S.I.R.O., Dr. the Honourable D. A. Cameron, construction of a new building, called a "phytotron", has begun in Canberra. It is expected that the building will be completed early in 1962. It will eventually be equipped with 140 specially designed glass cabinets in which various species of pasture and crop plants will be grown experimentally. The Canberra phytotron will provide facilities similar to those at the California, Paris and Moscow phytotrons, but will have a number of unique features which permit a closer degree of control over the artificial climate conditions. Canberra, with well over a hundred plant scientists, most of whom are members of the C.S.I.R.O. Division of Plant Industry, is one of the largest plant research centres in the world. There are also many other scientists throughout Australia, in universities and in research stations, who will be equally anxious to use phytotron facilities. The phytotron is expected to become a rallying point for plant research workers, not only from Australia, but also from other parts of the world.

Second International Conference of Human Genetics.

The Second International Conference of Human Genetics will be held at Rome on September 7 to 12, 1961. There will be a joint session with the Seventh International Congress of Neurology under the chairmanship of Professor Van Bogaert. The Conference will comprise some general sessions, symposia and the joint session previously mentioned. The afternoons in general will be devoted to separate simultaneous sessions with the presentation of contributed papers. Information relating to the Conference may be obtained on application to the Secretariat, at the following address: Instituto Gregorio Mendel, piazza Galeno, 5, Rome, Italy; telephone 864, 658. After August 15, the address will be: FAO Conference Building, Viale Terma di Caracalla, Rome; telephone 599, 071.

Anæsthesiology Training Course in Copenhagen.

Twenty-two physicians from various parts of the world recently completed the tenth anæsthesiology training course at the University of Copenhagen. They had all studied on fellowships awarded by the World Health Organization. During the past ten years, Copenhagen has become one of the most important centres in the world for training in anæsthesiology, and many new techniques have been developed there as a result of experience gained in the poliomyelitis epidemic which struck Denmark some years ago. The Copenhagen anæsthesiology training course was

created with WHO assistance in 1950 to introduce modern methods of anæsthesia in Denmark, and was attended at first by Scandinavian students only. Later it was thrown open to WHO Fellows from other countries, and up to the present nearly 300 physicians from 46 countries have taken the course.

Summer School in Health Education.

The Central Council for Health Education is holding its annual summer school at the University College of North Wales, Neuadd Reichel, Bangor, from Tuesday, August 15, till Friday, August 25, 1961. Two "self-contained" seminars, one on mental health and one on positive health, each lasting two days, will be organized within the ten-day period. The remainder of the time will be devoted to group practical work including the production of visual aids, short films, filmstrips, leaflets and posters, and lectures and discussions on topics related to social medicine and health education. Films will be demonstrated throughout the course, and visits of observation will be arranged. Information relating to the summer school may be obtained from the Central Council for Health Education, Tavistock House North, Tavistock Square, London.

University Intelligence.

UNIVERSITY OF MELBOURNE.

THE annual meeting of Convocation and the monthly meeting of the Standing Committee of Convocation will be held in the Public Lecture Theatre, University of Melbourne, on Friday, March 17, 1961, at 8 p.m. The Warden of Convocation expresses the hope that as many graduates as possible will attend the annual meeting, and thereby give support to those who conduct this important aspect of University governance in the name of all graduates of the University of Melbourne. The annual meeting will conclude with an address by Sir Leslie Martin, C.B.E., F.R.S., chairman of the Australian Universities Commission, who will talk under the title "The Future of Universities". By special arrangement, a buffet dinner will be held in Union House before the annual meeting, at 6 p.m. for 6.30 p.m. The total charge for dinner will be £1 per head, of which members of Convocation will be required to pay 10s., payable in advance to the Registrar, the balance being paid by the University. The number of tickets is limited, so applications should be made as soon as possible. Those who wish to apply should do so, with their subscription, to the Registrar before March 7, 1961. An entrée card will be sent by return mail.

The World Medical Association.

DEATH OF THE SECRETARY-GENERAL.

THE Headquarters Secretariat of The World Medical Association regretfully announces the death of its Secretary-General, Dr. Heinz Lord, on February 3, 1961, in Chicago. Dr. Lord had held the position only since January 1, 1961. On the day of his death, he attended the Rural Health Study Conference in Chicago, at which he presented a paper entitled "The Changing Pattern of Medical Care". Dr. Lord is survived by his wife and two children.

Medical Practice.

POLICE OFFENCES (AMENDMENT) ACT, 1908, OF NEW SOUTH WALES, AS AMENDED.

THE following notice appeared in the *Government Gazette of the State of New South Wales*, No. 17, of February 10, 1961.

POLICE OFFENCES (AMENDMENT) ACT, 1908, AS AMENDED.

Withdrawal of Authority to be in Possession of Drugs.

IT is hereby notified for general information that under the provisions of Regulation No. 25 of the *Police Offences (Amendment) Act*, 1908, as amended, the authority of Dr. George Alan Dorman to be in possession of drugs to which the Act applies for the purpose of his profession and to

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED JANUARY 21 1961.[1]

Disease.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Northern Territory.	Australian Capital Territory.	Australia.
Acute Rheumatism	1	3(1)	..	..	..	..	..	..	4
Amœbiasis	..	..	..	..	..	..	..	..	..
Ancylostomiasis	..	..	..	..	..	..	7	..	7
Anthrax	..	..	..	..	..	..	..	..	..
Bilharziasis	..	..	..	..	..	..	..	..	..
Brucellosis	2(1)	..	..	..	1	1	..	..	4
Cholera	..	..	..	..	..	..	..	..	..
Chorea (St. Vitus)	..	..	..	..	..	..	..	..	..
Dengue	..	..	..	..	..	..	..	..	..
Diarrhœa (Infantile)	12(6)	20(19)	5(3)	..	1	..	13	..	51
Diphtheria	..	..	..	..	..	..	..	..	..
Dysentery (Bacillary)	..	1(1)	2	..	1	..	..	..	4
Encephalitis	1	..	..	..	..	..	..	..	1
Filariasis	..	..	..	..	..	..	..	..	..
Homologous Serum Jaundice	..	..	..	..	..	..	..	..	..
Hydatid	..	..	..	..	..	..	..	..	..
Infective Hepatitis	116(60)	70(40)	17(3)	20(10)	18(9)	1	2	..	244
Lead Poisoning	..	..	..	..	..	..	..	..	..
Leprosy	..	..	..	..	3	..	1	..	4
Leptospirosis	..	..	1	..	1	..	..	..	2
Malaria	..	..	..	..	..	..	..	..	..
Meningococcal Infection	..	2(1)	..	..	..	..	..	..	2
Ophthalmia	..	..	..	..	..	..	..	..	..
Ornithosis	..	..	..	..	..	..	..	..	..
Paratyphoid	..	..	..	..	..	..	..	..	..
Plague	..	..	..	..	..	..	..	..	..
Poliomyelitis	..	5(4)	..	1(1)	..	3(2)	..	..	9
Puerperal Fever	..	..	..	..	..	..	..	..	..
Rubella	..	2(1)	..	..	11(10)	1(1)	..	..	14
Salmonella Infection	..	..	..	..	1(1)	..	..	..	1
Scarlet Fever	6(2)	5(2)	1(1)	..	..	..	..	..	12
Smallpox	..	..	..	..	..	..	..	..	..
Tetanus	..	1(1)	1(1)	..	1(1)	..	..	..	3
Trachoma	..	..	..	..	..	..	..	..	..
Trichinosis	..	..	..	..	..	..	..	..	..
Tuberculosis	43(25)	17(14)	9(3)	7(4)	5(4)	1	..	1	83
Typhoid Fever	..	..	..	..	..	..	..	..	..
Typhus (Flea-, Mite- and Tick-borne)	..	..	..	..	..	..	..	..	..
Typhus (Louse-borne)	..	..	..	..	..	..	..	..	..
Yellow Fever	..	..	..	..	..	..	..	..	..

[1] Figures in parentheses are those for the metropolitan area.

issue prescriptions for such drugs, is withdrawn as on and from Monday, February 27, 1961.

C. A. KELLY,
Chief Secretary.

Notice.

BRITISH MEDICAL ASSOCIATION, VICTORIAN BRANCH.

Section of Preventive Medicine.

A MEETING of the Section of Preventive Medicine of the Victorian Branch of the B.M.A. will be held on March 9, 1961, at the Medical Society Hall, 426 Albert Street, East Melbourne, at 4.30 p.m. The subject for discussion will be "Swimming Pools in Relation to Public Health". Dr. H. Shannon and Dr. Leslie Kirsner will open the meeting by discussing the incidence of upper respiratory tract infections associated with the use of enclosed swimming pools. Professor F. Duras will discuss the physiological and psychological benefits of swimming. All those interested are invited to attend.

THE CHILDREN'S MEDICAL RESEARCH FOUNDATION OF NEW SOUTH WALES.

THE following is a list of donations to the Children's Medical Research Foundation of N.S.W. received from members of the medical profession from September 28, 1960, to January 31, 1961.

Dr. Shirley Le V. Brown: £250.

Dr. W. F. Pattinson: £100.

Dr. D. Klineberg, Dr. T. H. Small: £20.

Medical residents, Parramatta District Hospital. £12 12s.

Dr. Ian F. Waugh, Dr. and Mrs. H. R. Angell, Dr. Maisie H. Asher and Dr. Joan Asher, Dr. A. K. Barrett, Dr. John Biddulph, Dr. and Mrs. R. J. Chapman, Dr. N. W. Keith Craig, Dr. J. C. Fulton, Dr. E. Goulston, Dr. Aileen Mitchell, Dr. Angus Murray: £10 10s.

Dr. J. Beveridge, Dr. E. P. Blashki, Dr. I. S. Edwards, Dr. Robert de Monchaux, Dr. R. H. Macdonald, Dr. K. E. Goard and Dr. Denise M. Goard, Dr. A. Shepherd, Dr. and Mrs. J. H. Stephenson, Dr. and Mrs. T. K. S. Whiting, Dr. G. Wise: £10.

Dr. F. C. McCredie: £7 7s.

Dr. and Mrs. T. A. G. Holmes, Dr. P. E. Walton-Smith: £6.

Dr. and Mrs. F. D. Smith: £5 5s. 6d.

Dr. D. D. Bathgate, Dr. Loraine C. Hibbard, Dr. Stewart McKee, Dr. and Mrs. J. S. Newlinds, Mr. R. Shedden and Dr. Corin Shedden: £5 5s.

Dr. G. Greenwood, Dr. M. Henley: £5.

Dr. D. Nolan: £3.

Dr. David Hansman: £2 2s.

Previously acknowledged: £11,488 9s. 10d. Total received to date: £12,172 11s. 10d.

Nominations and Elections.

THE following have applied for election as members of the New South Wales Branch of the British Medical Association:

Cumming, John, M.B., B.S., 1960 (Univ. Sydney), Bankstown District Hospital, Bankstown.

Tyrrell, Margaret Dulcie, M.B., B.S., 1958 (Univ. Sydney), Royal Newcastle Hospital, Newcastle.

Corrigendum.

ACUTE CHLORAMPHENICOL POISONING IN THE NEW-BORN PERIOD.

DR. JOHN BEVERIDGE informs us that there was an error in his paper entitled "Acute Chloramphenicol Poisoning in the New-Born Period", published in the issue of January 21, 1961, at page 93. In the third paragraph, which appears under the pictorial representation of the chemical compound, it is stated that: "The peak plasma level is usually reached about 24 hours after an oral dose. . . ." This should read: "The peak plasma level is usually reached about two hours after an oral dose. . . ."

Diary for the Month.

FEBRUARY 28.—New South Wales Branch, B.M.A.: Hospitals Committee.
MARCH 1.—Western Australian Branch, B.M.A.: Branch Council Meeting.
MARCH 1.—Victorian Branch, B.M.A.: Branch Council Meeting.
MARCH 2.—South Australian Branch, B.M.A.: Council Meeting.
MARCH 2.—New South Wales Branch, B.M.A.: Branch Meeting.
MARCH 3.—Queensland Branch, B.M.A.: Clinical Meeting, Princess Alexandra Hospital Clinical Society.
MARCH 7.—New South Wales Branch, B.M.A.: Executive and Finance Committee; Organization and Science Committee.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Medical Secretary, 135 Macquarie Street, Sydney): All contract practice appointments in New South Wales.

South Australian Branch (Honorary Secretary, 80 Brougham Place, North Adelaide): All contract practice appointments in South Australia.

Editorial Notices.

ALL articles submitted for publication in this Journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations, other than those normally used by the Journal, and not to underline either words or phrases.

Authors of papers are asked to state for inclusion in the title their principal qualifications as well as their relevant appointment and/or the unit, hospital or department from which the paper comes.

References to articles and books should be carefully checked. In a reference to an article in a journal the following information should be given: surname of author, initials of author, year, full title of article, name of journal, volume, number of first page of article. In a reference to a book the following information should be given: surname of author, initials of author, year of publication, full title of book, publisher, place of publication, page number (where relevant). The abbreviations used for the titles of journals are those of the list known as "World Medical Periodicals" (published by the World Medical Association). If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full data in each instance.

Authors submitting illustrations are asked, if possible, to provide the originals (not photographic copies) of line drawings, graphs and diagrams, and prints from the original negatives of photomicrographs. Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary is stated.

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